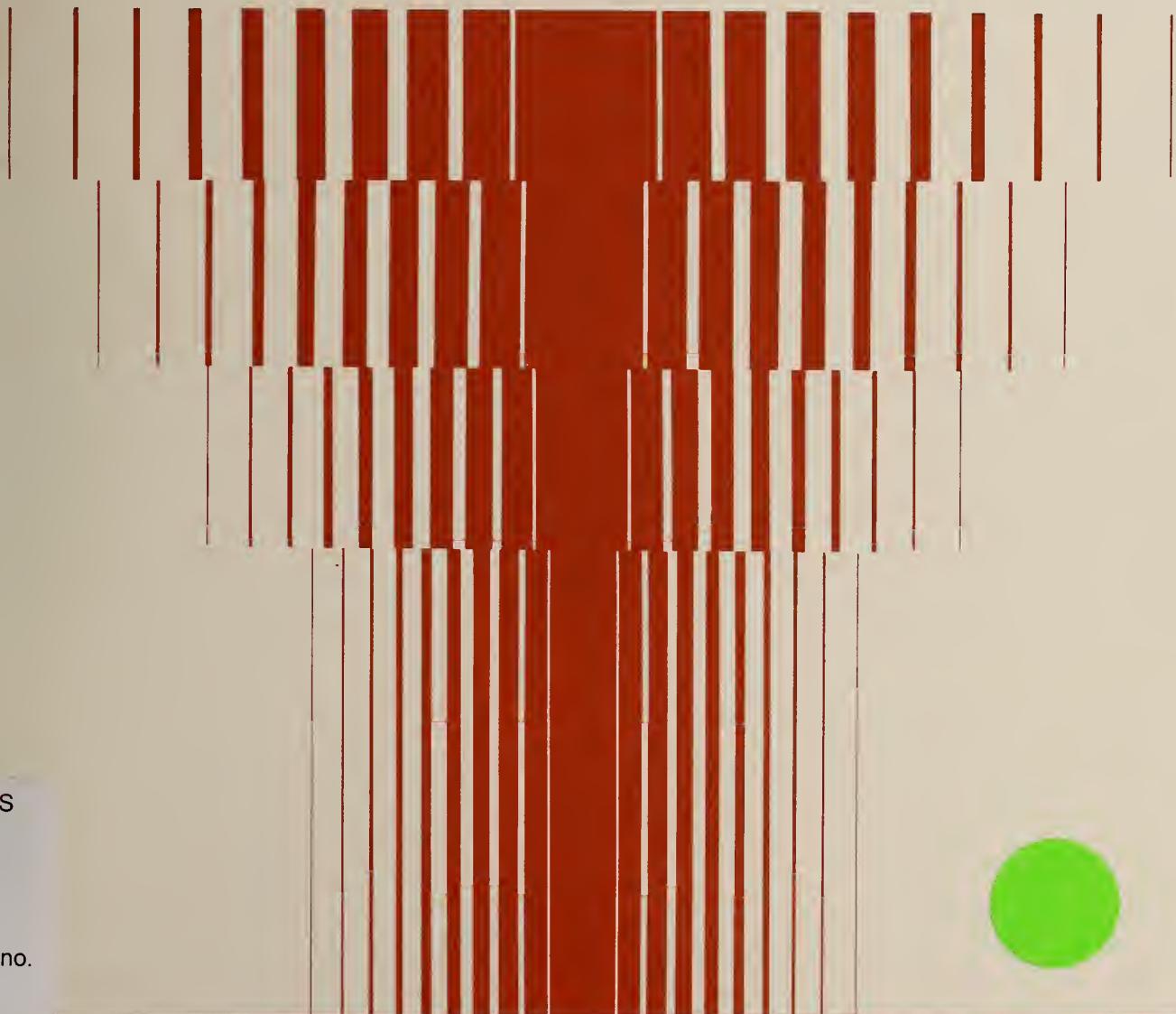


Outpatient Prescription Drug Utilization and Expenditure Patterns of Noninstitutionalized Aged Medicare Beneficiaries

Series B, Descriptive Report No. 12



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12 (1987)



Health Care Financing
Administration
Office of Research
and Demonstrations



Public Health Service
Office of Health Research,
Statistics, and Technology
National Center for
Health Statistics

National Medical Care Utilization and Expenditure Survey

The National Medical Care Utilization and Expenditure Survey (NMCUES) is a unique source of detailed national estimates on the utilization of and expenditures for various types of medical care. NMCUES is designed to be directly responsive to the continuing need for statistical information on health care expenditures associated with health services utilization for the entire U.S. population.

NMCUES will produce comparable estimates over time for evaluation of the impact of legislation and programs on health status, costs, utilization, and illness-related behavior in the medical care delivery system. In addition to national estimates for the civilian noninstitutionalized population, it will also provide separate estimates for the Medicaid-eligible populations in four States.

The first cycle of NMCUES, which covers calendar year 1980, was designed and conducted as a collaborative effort between the National Center for Health Statistics, Public Health Service, and the Office of Research and Demonstrations, Health Care Financing Administration. Data were obtained from three survey components. The first was a national household survey, and the second was a survey of Medicaid enrollees in four States (California, Michigan, Texas, and New York). Both components involved five interviews over a period of 15

months to obtain information on medical care utilization and expenditures and other health-related information. The third component was an administrative records survey that verified the eligibility status of respondents for the Medicare and Medicaid programs and supplemented the household data with claims data for the Medicare and Medicaid populations.

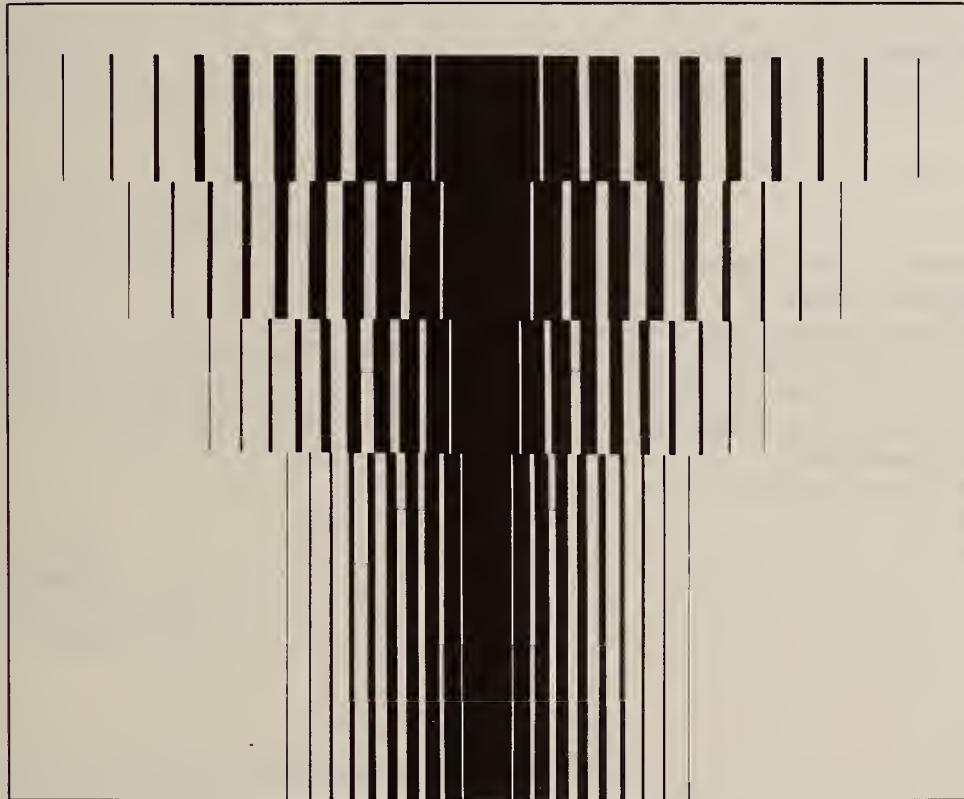
Data collection was accomplished by Research Triangle Institute, Research Triangle Park, N.C., and its subcontractors, the National Opinion Research Center of the University of Chicago, Ill., and SysteMetrics, Inc., Santa Barbara, Calif., under Contract No. 233-79-2032.

Co-Project Officers for the Survey were Robert R. Fuchsberg of the National Center for Health Statistics (NCHS) and Allen Dobson of the Health Care Financing Administration (HCFA). Robert A. Wright of NCHS and Larry Corder of HCFA also had major responsibilities. Daniel G. Horvitz of Research Triangle Institute was the Project Director primarily responsible for data collection, along with Associate Project Directors Esther Fleishman of the National Opinion Research Center, Robert H. Thornton of Research Triangle Institute, and James S. Lubalin of SysteMetrics, Inc. Barbara Moser of Research Triangle Institute was the Project Director primarily responsible for data processing.

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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Outpatient Prescription Drug Utilization and Expenditure Patterns of Noninstitutionalized Aged Medicare Beneficiaries

Lisa M. LaVange, Research Triangle Institute, and
Herbert A. Silverman, Health Care Financing Administration

Executive Summary

The goal of the National Medical Care Utilization and Expenditure Survey (NMCUES) of 1980 was to improve the understanding of the ways in which Americans use and pay for health care. This report is one in a series of descriptive reports based on NMCUES data.

This report provides data regarding prescription drugs obtained on an outpatient basis by noninstitutionalized elderly people who reported being covered by Medicare in 1980. The results presented are based on NMCUES data collected about the civilian noninstitutionalized persons in the NMCUES national household sample who at any time during the survey year of 1980: (1) were 65 years of age or over, and (2) reported having been covered by Medicare hospital insurance (HI) or Medicare supplementary medical insurance (SMI) or both. These results include the number of prescriptions obtained during the survey year, the total charges for these prescriptions, the amounts paid by various sources, and the types of drugs obtained.

Noninstitutionalized aged Medicare beneficiaries obtained an estimated 288 million prescriptions during 1980 and spent an estimated \$2.3 billion for prescription drugs. Four of five beneficiaries used prescription drugs during the year. Although aged Medicare beneficiaries represented only 10.9 percent of the U.S. population during 1980, they accounted for 28.6 percent of all prescriptions and 30.2 percent of total prescription drug charges.

The average aged beneficiary during the year purchased 12.1 prescriptions and incurred \$98 of expenditures, about three times the average of those under 65 years of age. The average charge per prescription was \$8.05. Prescription drug charges accounted for 5.5 percent of an estimated \$42 billion spent by aged Medicare beneficiaries for health care during 1980, excluding charges for institutional care.

Prescription drug use and expenditures were lower among people 65-69 years of age than among people 70-74

or 75-79 years of age. On average, women used more prescriptions and incurred higher charges than did men. Regionally, the average number of prescriptions that were filled per beneficiary was highest in the South and lowest in the West. People who perceived their health status to be poor had approximately four times as many prescriptions filled per person and incurred four times the average annual charge of people who perceived their health status to be excellent.

Approximately 68 percent of the total dollars spent by aged Medicare beneficiaries for prescription drugs was paid out-of-pocket, 13.9 percent was paid by private health insurance, and 10.8 percent was paid by Medicaid. The remaining charges were distributed among other payers. Medicare does not pay for prescriptions obtained on an outpatient basis.

Slightly more than 17 percent of all prescriptions obtained by aged Medicare beneficiaries were generic or non-brand-name drugs. Prescriptions obtained in the West were more likely to consist of generic drugs than were prescriptions obtained in other regions. Approximately one-half of all prescriptions consisted of cardiovascular-renal agents (39.4 percent) or drugs for the relief of pain (11.3 percent).

Overall, the financial burden for prescription drug use among aged Medicare beneficiaries has not increased as rapidly as that due to other health care costs. However, the relative financial burden differed by poverty status. Utilization patterns for poor and near-poor aged Medicare beneficiaries were consistent with the aged Medicare population in general. An estimated 19 percent of the beneficiaries were poor, while almost 39 percent were near-poor. These two groups accounted for about 22 percent and 39 percent of total prescription drug usage and about 21 percent and 39 percent of total charges, respectively. Poor beneficiaries obtained more prescriptions per person (13.7) than did nonpoor beneficiaries (11.3). Medicaid paid a significantly larger percentage of the total charges for poor people (28.4 percent) than for near-poor people (8.3 percent). Despite the high proportion of drug costs paid by Medicaid, the poor paid 1.8 percent of their median family income out-of-pocket for drugs compared to 1.0 percent for the near-poor and 0.3 percent for the nonpoor beneficiaries.

The 5 percent of the aged Medicare population with

NOTE: Several statisticians contributed to the preparation of this report. These include Scott Sweetland and Rick Williams of Research Triangle Institute (RTI). Hu Bennett of RTI and Doris Simmons of HCFA provided editorial review.

the greatest number of prescriptions filled (those with more than 42 prescriptions) accounted for almost 25 percent of all prescriptions and about 24 percent of expenditures. The 5 percent consisting of people with the highest expenditures (those with more than \$354 of expenditures)

accounted for almost 22 percent of all prescriptions and about 26 percent of expenditures. On average, people in these high-use subgroups had almost 5 times the utilization and 5 times the expenditures of the aged Medicare population in general.

Introduction

This report provides descriptive information regarding the patterns of prescription drug utilization and expenditures among noninstitutionalized aged Medicare beneficiaries. Results are presented in terms of the number of prescriptions obtained, the charges incurred for these prescriptions, the amounts paid by various sources, and the types of drugs obtained. Patterns of prescription drug use are described for the entire aged Medicare population and for various demographic and socioeconomic subgroups, including the high-usage sector of the population.

Data for this report were collected during the National Medical Care Utilization and Expenditure Survey (NMCUES). The goal of this survey was to gather information concerning health care utilization and expenditures for the civilian noninstitutionalized population during 1980. The data on the use of prescription drugs are limited to those obtained on an outpatient basis. This report is concerned with all persons in the NMCUES national household sample who were 65 years of age or over during 1980 and who reported being covered by Medicare hospital insurance or supplementary medical insurance (SMI) or both during the survey.

Prescription drug use among elderly Medicare beneficiaries has recently been of interest to health care analysts and public policymakers. Expenditures for prescription drugs obtained on an outpatient basis are one of the major categories of health care expenditures not currently covered by Medicare. Therefore, much attention has been focused recently on the financial burden that prescription drug expenses impose on elderly people. Data presented in this report should be useful in addressing these issues.

Survey Background

The goal of the National Medical Care Utilization and Expenditure Survey was to improve understanding of the ways in which Americans use and pay for health care. In addition to providing a reliable statistical description of the types of health services consumed and the amount of dollars spent for them, NMCUES was designed to permit health policy analysts to investigate a broad range of issues concerning the financing and delivery of health services in the United States.

NMCUES data reflect the health care experience of

the civilian noninstitutionalized population of the United States during 1980. NMCUES is the seventh survey of national health care utilization and expenditures that has been conducted since 1953. The most recent survey prior to NMCUES, the National Medical Care Expenditure Survey, was conducted in 1977. NMCUES was designed with special emphasis on the experiences of Medicare and Medicaid beneficiaries.

NMCUES comprised three components:

- A randomly selected, national household survey (HHS) sample panel of the civilian noninstitutionalized population.
- A randomly selected four-State Medicaid household survey (SMHS) sample panel of the civilian noninstitutionalized population.
- A Medicare and Medicaid administrative records survey (ARS) sample.

Each survey component was designed on a longitudinal basis to provide accurate representations of medical care events occurring throughout 1980.

HHS employed a national probability sample of the civilian noninstitutionalized population with a sample of 6,600 households (about 17,900 people) representing the national Medicare and Medicaid populations as well as the general population. Five interviews (each group of interviews is referred to as a survey "round") were conducted with respondents regarding events related to medical care received in 1980. The first, second, and fifth interviews were conducted in person, while the third and fourth interviews were conducted primarily by telephone. A core questionnaire was employed in each interview. This document contained questions concerning medical care utilization, expenditures, sources of payment, health insurance coverage, and employment. Certain summary information that was reported in Rounds 1-4 was reviewed with the respondents at the time of the next interview, referred to as the "summary update"; inaccurate reports were updated at that time. In addition, questionnaire supplements were used in the first, third, and fifth rounds of interviews. The supplement for Round 1 contained questions concerning demographic and social characteristics, limitations in activity, and family income. The Round 3 supplement included questions about access to care. The Round 5 supplement included detailed questions concerning employ-

ment during 1980, individual income by source, and functional limitations.

SMHS was in fact four separate surveys conducted in New York, California, Texas, and Michigan. A stratified sample of sufficient size was drawn from each State's Medicaid eligibility file to yield 1,000 Medicaid noninstitutionalized cases (about 3,400 people) in each State. Essentially, the same questionnaire and virtually identical data collection and processing steps were used for SMHS and HHS.

ARS, the third NMCUES component, was designed to provide Medicare and Medicaid administrative records for linkage to respondent reports. For HHS, self-reported Medicare and Medicaid enrollment status were verified, Medicare claims were collected, and the Medicaid eligibility status of a sample of low-income persons who did not report Medicaid enrollment was determined. For SMHS, Medicare and Medicaid enrollment status was verified and Medicare and Medicaid claims data were collected for survey respondents. The merger of survey data on beneficiary characteristics and out-of-pocket expenditures with eligibility and reimbursement data from Medicare and Medicaid administrative records is a unique feature that increases the value of NMCUES for the study of Medicare and Medicaid policy issues. However, this report is based on HHS data that were not adjusted with ARS information.

NMCUES was conducted during the period of February 1980 through April 1981. The overall response rate for HHS was 89 percent. SMHS response rates were 82 percent for California, 80 percent for Michigan, 77 percent for New York, and 92 percent for Texas.

The Health Care Financing Administration (HCFA) and the National Center for Health Statistics (NCHS) cosponsored the NMCUES survey. The data were collected by the Research Triangle Institute (RTI) and its subcontractors, the National Opinion Research Center (NORC) and SysteMetrics, Inc. (SMI).

This report is one of a series of descriptive reports being prepared by HCFA's Office of Research and Demonstrations, Division of Beneficiary Studies, RTI, and SMI. The series will concentrate on current health care policy issues related to the Medicare and Medicaid programs. It is intended to provide information for use by government agencies, legislative bodies, professional associations, private insurers, and others with an interest in national patterns of health care use and expenditures. A companion series of reports focusing on the health experiences of the national population is being published by NCHS.

Program Background

The Medicare program provides coverage for hospital, physician, and other medical services for persons 65 years of age or over and for certain other persons.¹ Coverage is pro-

vided through two separate but complementary Medicare components: hospital insurance (Part A) and supplementary medical insurance (Part B). Hospital insurance provides coverage for the cost of inpatient hospital stays and certain posthospital care, and it requires no payment of premium by beneficiaries. Supplementary medical insurance provides coverage for physician services and certain physician-ordered services and supplies, outpatient services, and home health agency services, and it requires the payment of a monthly premium. Total Medicare benefit payments in 1980 were over \$35 billion.

Medicare covers prescription drug costs only under the following circumstances:

- Medicines furnished by a hospital as part of a hospital stay.
- Medicines furnished by a skilled nursing facility to a patient at that facility.
- Medicines that cannot be self-administered and must be administered by a health professional.

Records of the Health Care Financing Administration's Office of Research and Demonstrations indicate that 26.4 million elderly persons were enrolled in 1980 in the Medicare hospital insurance program or supplementary medical insurance program or both. This count includes those living in institutions, who are estimated to constitute 5 to 6 percent of aged Medicare beneficiaries. Subtracting the estimated number of institutionalized persons from the total yields an estimate of the total noninstitutionalized aged Medicare beneficiary population of from 24.9 to 25.1 million persons. The estimate of the size of this population group from the NMCUES survey is 23.7 million people, with a 95-percent confidence interval ranging from 21.4 to 26.0 million people. Thus, the estimate of the population size derived from Medicare program records falls within sampling error limits of the estimate derived from the NMCUES survey.

Definitions, Methods, and Limitations

Results are presented in this report for the population of interest, consisting of noninstitutionalized aged Medicare beneficiaries in the United States during 1980. Analyses are based on all people in the NMCUES national household sample who were 65 years of age or over during 1980 and who reported being covered by Medicare hospital insurance or supplementary medical insurance or both during the survey.

For purposes of this report, the term "prescription drug" refers to any drug, medication, or biological agent prescribed by a physician. NMCUES respondents were asked to report the purchase of any medicines that were obtained by filling or refilling a prescription either directly or via a physician's telephone call to a pharmacist. Respondents were also asked to report any prescriptions that were received free of charge from a physician's office

¹Other categories of people covered under Medicare are those disabled people who are entitled to Social Security cash benefits for 24 consecutive months and most people with end stage renal disease.

or clinic. The name of each prescription drug, the number of times it was obtained, and the total charge were recorded. The counts of prescriptions that are presented in this report refer to the total number of times that a prescription drug was obtained by any of these methods and include prescriptions that were obtained free of charge. Prescription drug charges or expenditures refer to the total amounts charged for these prescriptions, including any amounts paid by sources other than the respondent.

In addition to reporting the total charge for each prescription, respondents were asked to give the amounts paid by various sources. The amounts paid by self or family (herein referred to as the out-of-pocket expenditure) and by as many as three additional sources of payment were recorded for each medicine. Six categories of source of payment were defined: (1) Medicare, (2) Medicaid, (3) self or family (i.e., out-of-pocket), (4) private insurance, (5) other public programs, and (6) unknown source or unpaid amount.

The therapeutic function of a prescription drug refers to the medical use for which the drug was obtained. The therapeutic function of each prescription drug that was reported was manually coded from the name of the drug according to rules specified in the *American Medical Association Drug Evaluations, Third Edition* (1977). Nineteen categories of therapeutic functions were defined and are given in Appendix I. For purposes of this report, differentiation was also made between generic (chemical name) drugs and nongeneric (brand name) drugs.

For purposes of comparison, several subgroups of the aged Medicare beneficiary population were defined for analysis. Sample members were classified into three groups based on their reported 1980 family income relative to the 1980 poverty level defined by the Bureau of the Census: (1) poor, (2) near-poor, and (3) nonpoor. The "poor" people are those in families whose income was less than or equal to the poverty level. The "near-poor" people are those in families whose income was above the poverty level but less than or equal to twice the poverty level, while the "nonpoor" people are those in families whose income was greater than twice the poverty level. The definitions of poverty level used for this report are given in Appendix I.

A second grouping was defined on the basis of prescription drug utilization and expenditures. The high-use subgroup was defined as the top 5 percent of people ranked according to the total number of prescriptions obtained during the survey year. People who obtained more than 42 prescriptions during the year constitute the high-use subgroup. The high-expenditure subgroup was defined as the top 5 percent of people ranked according to total annual charges for prescription drugs. People who had annual expenditures greater than \$354 constituted the high-expenditure subgroup.

There are several constraints on the use of the NMCUES data for analysis of prescription drug utilization and expenditures:

- No information was collected about the prescription size as measured by the number of doses.
- Data about nonprescription or over-the-counter drugs were collected at the family level only and are not included in the scope of this report.
- Data are limited to prescription drugs obtained on an outpatient basis.

The NMCUES data do not include prescription drugs that were obtained in a hospital or skilled nursing facility. However, it was possible that a respondent reported a drug administered by a health professional as an outpatient drug during the survey. Approximately 3 percent of all prescription drug charges were reported as being paid for by Medicare. This estimate can be attributed in part to drugs administered by a health professional and reported as an outpatient drug, and in part to respondent error and/or interviewer error. The most likely respondent error that may be reflected in this estimate is confusion between the Medicare and Medicaid programs.

The results presented in this report consist primarily of estimates of totals, averages, and percentage distributions for prescriptions and charges among selected population subgroups. All averages that are reported were based on the average number of aged persons enrolled in Medicare during 1980. Relative standard errors of all estimates presented are given in Appendix IV, with one exception. Standard errors were not available for estimates of median family income.

Differences between subgroup estimates were tested for significance by constructing 95-percent confidence intervals about the differences. The variance of the difference between two estimates was approximated by the sum of the variances of the two estimates; thus, any covariance between the two estimates was ignored. All differences that are reported in the text were found to be significant unless otherwise noted. Occasionally, trends across several subgroups are discussed even though all pairwise differences were not significant. The intent of this report is limited to the provision of basic descriptive analyses for the population of interest; therefore, multivariate analysis techniques were not employed to explain any differences found in the data.

Data Highlights

Highlights of the findings that are presented in greater detail in the next section include the following:

- Noninstitutionalized aged Medicare beneficiaries obtained an estimated 288 million prescriptions during 1980 and incurred an estimated \$2.3 billion for prescription for drugs.
- Four of five beneficiaries used prescription drugs during the year.

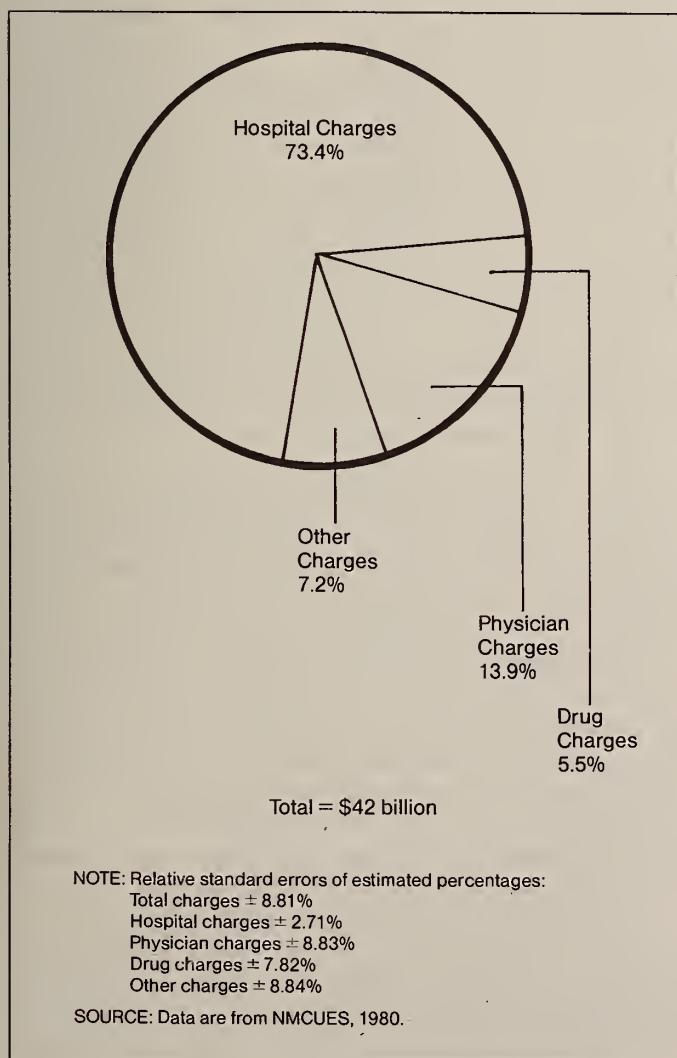
- Although aged Medicare beneficiaries represented only 10.9 percent of the U.S. population during 1980, they accounted for 28.6 percent of all prescriptions and 30.2 percent of total prescription drug charges.
- On average, Medicare beneficiaries filled 12.1 prescriptions and incurred \$98 in charges.
- The average charge per prescription was \$8.05.
- Prescription drug charges accounted for 5.5 percent of total health care charges incurred by aged Medicare beneficiaries.
- Prescription drug use and expenditures were lower among people 65-69 years of age than among people 70-74 or 75-79 years of age.
- Women obtained, on average, 31 percent more prescriptions (13.4) than did men (10.3) and incurred charges (\$107) which were, on average, 26 percent higher than those for men (\$85).
- Regionally, the average number of prescriptions filled per beneficiary was highest in the South and lowest in the West.
- People who perceived themselves to be in poor health had approximately four times as many prescriptions filled per person and incurred four times the average annual charge of people who perceived themselves to be in excellent health.
- Approximately 68 percent of the total charges incurred by aged Medicare beneficiaries for prescription drugs was paid out-of-pocket, 13.9 percent was paid by private insurance, and 10.8 percent was paid by Medicaid. The remaining charges were distributed among other payers.
- Generic drugs accounted for 17.3 percent of total prescriptions among aged Medicare beneficiaries. Prescriptions obtained in the West were more likely to consist of generic drugs than were prescriptions obtained in other regions.
- About one-half of all prescriptions that were obtained by aged Medicare beneficiaries consisted of cardiovascular renal agents and drugs used for the relief of pain.
- Poor beneficiaries obtained more prescriptions per person (13.7) than nonpoor beneficiaries (11.3). Medicaid paid a significantly larger percentage of the total charges for poor people (28.4 percent) than for the near-poor people (8.3 percent).
- People in the top 5 percent of the aged Medicare population with respect to number of prescriptions obtained or total charges incurred had almost five times the average utilization and almost five times the average annual expenditure of aged Medicare beneficiaries in general.

Findings

Use and Expenditures During 1980

Aged Medicare beneficiaries obtained an estimated 288 million prescriptions during 1980 for an estimated total charge of \$2.3 billion. NMCUES data showed that prescription drug charges represented 5.5 percent of an

Figure 1
Distribution of health care expenditures among noninstitutionalized, aged Medicare beneficiaries: United States, 1980.



estimated \$42 billion in charges incurred by noninstitutionalized aged Medicare beneficiaries for health care services during the year. Figure 1 illustrates the distribution of total health care charges by type of care.

NMCUES data indicated that elderly people accounted for a disproportionate share of the Nation's prescription drug expenditure in 1980. Table 1 gives estimates of prescription drug use among aged Medicare beneficiaries, the total U.S. population, and people under 65 years of age. Although aged Medicare beneficiaries represented only 10.9 percent of the 1980 noninstitutionalized U.S. population, their prescription drug use and expenditures corresponded to 28.6 percent of national prescription drug use and 30.2 percent of drug expenditures. The average number of prescriptions that were filled (12.1) and the average annual charges (\$98) per aged Medicare beneficiary were roughly three times greater than the estimates for both the U.S. population (4.6 prescriptions and \$35) and for people under 65 years of age (3.7 prescriptions and \$27).

Recent Trends in Prescription Drug Use

NMCUES results were for the most part consistent with trends in prescription drug use reported for recent years. The Current Medicare Survey (CMS) (Grindstaff et al., 1981), a monthly survey of SMI enrollees, probably provides the most complete data on prescription drug use among aged Medicare beneficiaries for the period of 1967-77. Usage estimates from this survey are presented in Table 2. The major difference between CMS and NMCUES was the inclusion of institutionalized people in the former. According to the 1973 estimates (Deacon, 1977), institutionalized people constituted 6 percent of the aged population, used approximately twice as many prescriptions per person, and incurred about double the charges of noninstitutionalized people. Different usage patterns among institutionalized and noninstitutionalized beneficiaries must therefore be taken into account when comparing estimates from these two surveys.

In 1980, four of five Medicare beneficiaries, or approximately 19 million people, had at least one prescription filled. This finding was consistent with results from other studies. CMS estimates, given in Table 2, indicated that the

Table 1
Prescription drug use and expenditures: United States, 1980¹

Population characteristic	Persons		Prescriptions		Prescription charges		Average number of prescriptions per person	Average annual charge per person
	Number in millions	Percent	Number in millions	Percent	Number in millions	Percent		
Total ²	217.9	100.0	1,003.9	100.0	\$7,667.2	100.0	4.6	\$35.19
Aged Medicare beneficiaries ..	23.7	10.9	287.5	28.6	2,314.2	30.2	12.1	97.68
Under 65 years of age	193.2	88.7	707.9	70.5	5,273.0	68.8	3.7	27.29

¹Estimates refer to the noninstitutionalized U.S. population.

²U.S. total includes persons 65 years of age or over who did not report Medicare coverage (0.4 percent).

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 22 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey: Data from the national household survey component.

Table 2
Prescription drug use, by aged beneficiaries: United States, 1967-80

Year ¹	Percent of aged beneficiaries using prescription drugs	Average number of prescriptions per beneficiary	Average annual charge per beneficiary	Average charge per prescription
1967.....	77.7	10.4	\$41.10	\$4.00
1968.....	75.3	11.2	45.40	4.10
1969.....	76.8	10.1	49.70	4.00
1970.....	78.0	13.1	56.10	4.30
1971.....	76.5	12.3	55.40	4.50
1972.....	77.8	13.1	59.40	4.50
1973.....	80.2	13.4	63.40	4.70
1974.....	80.0	14.1	70.60	5.00
1975.....	79.5	13.7	76.80	5.60
1976.....	80.9	14.1	85.30	6.00
1977.....	80.6	14.4	95.70	6.60
1977 ²	75.2	10.7	69.20	6.58
1980 ³	80.1	12.1	97.68	8.05

¹Data for 1967-77 are from CMS (Grindstaff et al., 1981) and include institutionalized beneficiaries.

²Data are from NMCES, 1977 (Kasper, 1982) for all noninstitutionalized persons 65 years of age or over.

³Data for 1980 are from NMCUES for noninstitutionalized, aged Medicare beneficiaries.

NOTE: The relative standard error (RSE) estimates for the statistics for only 1980 in this table are presented in Table 23 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor.

SOURCE: Current Medicare Survey, National Medical Care Expenditure Survey, and National Medical Care Utilization and Expenditure Survey.

percent of aged Medicare beneficiaries using prescription drugs ranged from 75 to 81 percent during 1967-77. The average number of prescriptions used per person ranged during that time period from 10.1 to 14.4. The NMCUES estimate, 12.1 prescriptions per beneficiary, was somewhat less than the CMS estimate for 1977, due in part to the inclusion of institutionalized people in the CMS estimate.

Usage estimates from the National Medical Care Expenditure Survey (NMCES) are also given in Table 2 (Kasper, 1982). This survey was conducted during 1977 by the then Department of Health, Education, and Welfare and was similar to the NMCUES in overall study design and objectives. The NMCES estimates shown are for the subgroup 65 years of age or over regardless of Medicare coverage. NMCUES data indicated that approximately 4 percent of all elderly people were not covered by Medicare in 1980 and that rates for health services utilization among aged people not covered by Medicare were considerably

lower than among elderly Medicare beneficiaries (Garfinkel et al., 1984). Differences in the study populations for which estimates are presented must therefore be taken into account when comparing results from these two surveys.

Estimates of prescription drug utilization from NMCES and NMCUES were fairly consistent. Differences in the percentage of aged Medicare beneficiaries using prescription drugs during 1977 (80.6 percent) and during 1980 (80.1 percent) and in the average number of prescriptions filled per person (10.7 and 12.1, respectively) were due in part to differences in the target populations, as mentioned above, and in part to sampling variation.

Average annual prescription drug charges among noninstitutionalized aged people increased during the previous decade. People 65 years of age or over incurred an average annual charge per person of \$56 during 1970 (Andersen et al., 1976) and \$69 during 1977 (Kasper, 1982), a 23-percent

Table 3

Relationship of prescription drug charges to median income: United States, 1967-80

Year ¹	Average annual charge per beneficiary	Estimated median annual income per beneficiary ²	Average annual charge as percent of median income
1967	\$41.10	NA	NA
1968	45.40	NA	NA
1969	49.70	\$2,021	2.5
1970	56.10	2,327	2.4
1971	55.40	2,520	2.2
1972	59.40	2,799	2.1
1973	63.40	3,241	2.0
1974	70.60	3,389	2.1
1975	76.80	4,773	1.6
1976	85.30	5,270	1.6
1977	95.70	5,672	1.7
1980 ³	97.68	9,410	1.0

¹Data for 1967-77 are from CMS (Grindstaff et al., 1981) and include institutionalized beneficiaries.

²Median annual income for 1967 through 1977 is the fiftieth percentile of the distribution of personal income among SMI enrollees. Median annual income for 1980 is the fiftieth percentile of the distribution of family income among aged Medicare beneficiaries.

³Data for 1980 are from NMCUES for noninstitutionalized, aged Medicare beneficiaries.

SOURCE: Current Medicare Survey and National Medical Care Utilization and Expenditure Survey.

increase. The NMCUES estimate of average annual charge per aged person, regardless of Medicare coverage, during 1980 was \$96 (Garfinkel et al., 1984). This estimate represented a 71-percent increase since 1970 and a 39-percent increase since 1977. However, the NMCUES estimate of average annual charge per aged person represented an increase of only \$6 since 1970 and \$5 since 1977 when expressed as CPI-adjusted costs.²

Estimates of average annual charges for prescription drugs from the CMS are presented in Table 2 for the period 1967-77. The average annual charge for aged SMI enrollees rose at an average annual rate of 8.8 percent during this period (Grindstaff et al., 1981). The NMCUES estimate of average annual charge per Medicare beneficiary for 1980 was \$98. This estimate was higher than the NMCUES estimate of average charge per aged person given above, \$96, due to the lower prescription drug utilization rate among aged persons not enrolled in Medicare. Average annual charge per aged beneficiary during 1980 as estimated from NMCUES data was only slightly higher than the CMS estimate for 1977. The fact that the NMCUES estimate did not reflect a large increase over this 3-year period was probably due to different spending patterns among institutionalized and noninstitutionalized aged Medicare beneficiaries as well as to sampling variation.

Increases in personal expenditures for prescription drugs were closely related to increases in the average charge per prescription filled. Estimates of average charge per prescription from CMS, NM CES, and NMCUES were fairly consistent, as illustrated in Table 2. The average

charge per prescription increased steadily from 1967 to 1980 (\$4.00 versus \$8.05).³ This increase was partly attributable to a concurrent increase in the average size of prescriptions, as measured by the number of doses, over the same period.

Firestone (1979) showed that although the average prescription charge increased 100 percent from 1960 to 1978, the price per dose rose only 21 percent, due to an increase of 66 percent in prescription size over the same period. Grindstaff et al. (1981) found a similar trend among drugs prescribed for conditions frequently occurring among elderly people. Average prescription size for these drugs rose 22 percent from 1967 to 1973. The increase in average charge per prescription evidenced by the NMCUES data probably reflected, at least in part, a continuing trend in increasing prescription size.

Because Medicare does not cover drugs received on an outpatient basis unless they are administered by a health professional, prescription drug charges as a percent of income is a good indicator of the financial burden for prescription drug use among aged Medicare beneficiaries. Estimates of prescription drug charges as a percent of median annual personal income from the CMS are presented in Table 3. Grindstaff et al. (1981) found a small but consistent decrease between 1969 and 1977 (from 2.5 to 1.7 percent). For purposes of this report, financial burden was defined in terms of annual family income. The NMCUES estimate of prescription drug charges as a percent of median annual family income is presented in Table 3. Aged Medicare beneficiaries spent 1.0 percent of their median annual family income for prescription drugs during 1980.

²The Consumer Price Indices for prescription drugs for 1970, 1977, and 1980 were 101.2, 122.1, and 155.8, respectively, with 1967 as the baseline. The CPI for each year was based on the U.S. city average for wage earners and clerical workers (U.S. Department of Labor, Monthly Labor Review).

³The difference between the price increase from 1967 to 1980 computed from the CPI, 56 percent, and the increase in average charge per prescription, 101 percent, is probably due to the introduction of new and more costly drugs into the marketplace. The costs of new drugs are usually not reflected by the CPI when first introduced.

This percent is less than that estimated from CMS data due to the fact that family income is usually larger than personal income for families with two or more members. The data indicate that the relative financial burden of drug expenditures among Medicare beneficiaries did not increase between 1977 and 1980.

Demographic Differences

The distributions of the number of prescriptions and prescription drug charges among aged Medicare beneficiaries are presented in Tables 4 and 5, respectively, for selected demographic characteristics. Excluding the age group 80 years or over, the use of prescription drugs tended to increase with age. The average number of prescriptions and average annual charge per beneficiary rose with age up through the group 75-79 years of age. The percent of people with at least one prescription increased with age. People in the group 65-69 years of age obtained an average of 10.1 prescriptions per beneficiary for an average annual charge of \$86. These estimates were lower than the estimates for the 70-74 age group (12.2 prescriptions and \$100) and for the 75-79 age group (15.2 prescriptions and \$116). This trend with respect to age did not continue for the group 80 years of age or over, which may be due to confounding of an age effect with increased nursing home utilization among this age group. The 1977 National Nursing Home Survey found that 10.3 percent of people 75 years of age or over were in nursing homes; for people 85 years of age or over, the percent rose to 21.6 percent (Van Nostrand et al., 1979). As noted earlier, institutionalized people used prescription drugs at a rate double that of noninstitutionalized people.

There were also sex differences in prescription drug utilization. Almost 25 percent of the men used no prescription drugs during the year as compared to about 16 percent of the women. Women obtained, on average, 31 percent more prescriptions than did men (13.4 and 10.3, respectively) and spent an average of 26 percent more for prescription drugs than did men (\$107 and \$85, respectively). These differences probably reflected the older age distribution among women. Grindstaff et al. (1981) found similar differences.

White aged Medicare beneficiaries obtained an average of 12.4 prescriptions per person, while black aged beneficiaries obtained an average of 9.9 prescriptions. The average annual charges for the two groups were \$99 and \$83, respectively. Although the distributions of prescriptions and charges suggest some racial differences, the standard errors were such that the differences were not statistically significant.

The average number of prescriptions filled per beneficiary declined slightly as income increased, but no significant differences were found. The trend in average annual charge with respect to income was more pronounced. People with an annual family income of less than \$5,000 in-

curred an average annual charge of \$105 as compared to only \$85 among people with an annual family income of \$20,000 or more.

Utilization tended to decrease as years of education increased. For example, the average numbers of prescriptions obtained per beneficiary by people with less than 8 years of education (12.9) and by people with 8 years of education (14.0) were both higher than for persons with 12 years of education (10.1).

Aged Medicare beneficiaries living in the South had the highest per beneficiary average number of prescriptions (13.6), while people living in the West had the lowest (10.5). Average annual charges per beneficiary for prescription drugs were higher in the South (\$110) than in either the West (\$87) or the Northeast (\$85). These regional differences were consistent with those found by Grindstaff et al. (1981). In general, prescription drug use did not vary with type of community.

Aged Medicare beneficiaries whose self-perceived health status was poor had significantly higher prescription drug utilization than did those whose self-perceived health status was fair, good, or excellent. For example, people who perceived themselves to be in excellent health had an average of 6.0 prescriptions filled and spent an average of \$47 per beneficiary, as compared to an average of 24.0 prescriptions and \$195 among people who perceived themselves to be in poor health. Almost 32 percent of the people considering themselves to be in excellent health did not use prescription drugs during the year, compared to about 7 percent of those considering themselves to be in poor health.

Source of Payment

Of the \$2.3 billion in charges incurred for prescription drugs by the aged Medicare population, it was estimated that 68.2 percent was paid out-of-pocket, 13.9 percent was paid by private health insurance, 10.8 percent by Medicaid, 3.1 percent by Medicare, and 4.0 percent by other or unknown sources (Table 6). The charges paid by Medicare were attributable in part to drugs administered by a health professional and reported as an outpatient service, and in part to respondent error. This issue is discussed in the section on Definitions, Methods, and Limitations.

Table 6 gives the distribution of source of payment for selected demographic characteristics. Source of payment varied little with respect to age or region, but differences were found by race, sex, income, education, and perceived health status. Medicaid paid 32.0 percent of the total charges for black aged Medicare beneficiaries as compared to 9.0 percent of those for white aged Medicare beneficiaries. White people paid a higher proportion of total charges out-of-pocket (69.6 percent) than did black people (52.6 percent). Women had a higher percentage of prescription drug charges paid by Medicaid than did men (12.9 versus 7.2 percent).

Table 4

Prescription drug utilization among noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Number of prescriptions in millions	Persons without prescriptions	Persons with 1-4 prescriptions	Persons with 5-9 prescriptions	Persons with 10-20 prescriptions	Persons with 21 or more prescriptions	Average number of prescriptions per beneficiary
Total.....	287.5	19.9	20.4	18.6	21.3	19.7	12.1
Age							
65-69 years	92.1	23.0	24.5	17.3	20.6	14.6	10.1
70-74 years	82.8	21.2	17.5	20.3	20.7	20.4	12.2
75-79 years	66.1	16.2	16.5	17.1	22.3	27.9	15.2
80 years or over.....	46.6	13.7	20.6	20.8	23.4	21.6	13.4
Sex							
Male.....	100.0	24.8	22.9	17.7	18.4	16.3	10.3
Female.....	187.6	16.4	18.8	19.3	23.3	22.1	13.4
Race¹							
White.....	265.9	19.1	20.3	19.0	21.6	20.0	12.4
Black.....	19.0	26.6	21.0	15.7	19.4	17.3	9.9
Annual family income							
Less than \$5,000.....	69.5	17.5	16.9	20.3	22.6	22.7	13.4
\$5,000-\$9,999	90.8	19.1	18.9	18.5	23.0	20.4	12.2
\$10,000-\$19,999	81.8	23.6	19.8	18.4	19.4	18.9	11.8
\$20,000 or more	45.4	18.0	28.7	17.3	19.8	16.2	10.9
Education							
Less than 8 years	71.8	19.4	21.3	16.6	20.2	22.6	12.9
8 years	63.4	18.2	20.2	14.8	22.5	24.3	14.0
9-11 years	48.5	22.2	17.9	18.3	22.7	19.0	11.8
12 years	49.8	21.7	20.7	22.3	21.5	13.8	10.1
13 years or more	54.1	18.0	21.8	21.4	20.1	18.7	11.9
Region							
Northeast	54.9	25.4	19.7	19.4	16.3	19.1	11.4
North Central	71.1	16.6	24.9	17.1	21.1	20.3	12.3
South.....	106.4	18.9	17.7	17.4	23.9	22.1	13.6
West.....	55.1	19.8	20.3	21.5	22.3	16.1	10.5
Type of community							
SMSA central city	78.5	21.6	20.5	20.8	19.2	18.0	10.8
SMSA remainder	97.8	20.7	19.2	20.5	22.4	17.2	12.0
Non-SMSA urban	53.4	18.5	18.7	16.9	21.6	24.3	13.5
Non-SMSA rural	57.9	16.7	24.3	13.2	22.7	23.0	13.3
Perceived health status²							
Excellent	37.0	31.9	24.9	21.1	16.1	6.0	6.0
Good	92.1	19.6	21.8	20.9	22.0	15.7	10.5
Fair	92.3	13.7	17.0	15.4	24.7	29.3	15.4
Poor	65.8	7.4	13.9	12.3	23.6	42.8	24.0

¹Estimates for the "other" race group were unreliable and are not shown separately but are included in the total.²The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 24 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 5

Prescription drug charges among noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Total charges in millions	Persons with \$0 ¹	Persons with \$1-\$30	Persons with \$31-\$75	Persons with \$76-\$160	Persons with more than \$160	Mean average charges per beneficiary
Percent							
Total.....	\$2,314.2	20.4	19.9	19.1	19.9	\$20.6	\$97.68
Age							
65-69 years	779.5	23.5	23.9	18.1	17.9	16.6	85.67
70-74 years	680.2	21.8	16.0	20.3	18.7	23.3	100.35
75-79 years	505.1	16.5	15.8	17.4	25.5	24.8	116.31
80 years or over.....	349.5	14.7	22.4	21.8	20.7	20.5	100.63
Sex							
Male.....	825.1	25.5	21.3	18.3	18.2	16.7	84.68
Female.....	1,489.1	16.9	19.0	19.7	21.1	23.3	106.76
Race ²							
White.....	2,133.2	19.7	19.9	19.5	20.0	20.9	99.30
Black	158.1	26.6	20.0	15.9	19.8	17.7	82.52
Annual family income							
Less than \$5,000.....	541.6	17.7	18.7	19.7	23.4	20.5	104.61
\$5,000-\$9,999	755.1	20.0	18.5	19.8	18.2	23.4	101.68
\$10,000-\$19,999	666.0	24.2	19.2	17.5	18.8	20.4	96.03
\$20,000 or more	351.5	18.3	25.3	19.9	20.6	15.9	84.63
Education							
Less than 8 years	539.0	20.5	21.1	16.2	20.7	21.5	97.02
8 years	510.3	19.0	21.5	15.9	18.2	25.5	112.68
9-11 years	392.2	22.5	15.9	20.8	19.9	20.9	94.98
12 years	427.7	22.0	21.7	20.6	19.1	16.7	86.73
13 years or more	445.1	18.3	18.7	23.0	21.6	18.5	97.88
Region							
Northeast	410.5	25.9	20.1	19.2	17.7	17.2	85.34
North Central	583.1	17.2	24.1	18.7	19.8	20.2	100.48
South.....	864.6	19.4	17.3	18.0	21.7	23.5	110.17
West	456.1	20.5	19.1	21.3	19.4	19.7	87.18
Type of community							
SMSA central city	650.5	21.9	20.4	20.2	17.9	19.6	89.67
SMSA remainder	768.9	21.3	18.9	20.4	21.6	17.8	94.34
Non-SMSA urban	422.5	19.2	17.0	20.1	20.6	23.1	107.06
Non-SMSA rural	472.3	17.6	23.8	14.0	19.5	25.1	108.81
Perceived health status ³							
Excellent	290.1	33.0	24.8	20.6	15.7	6.0	47.24
Good	733.8	20.1	20.8	20.1	22.0	16.9	83.71
Fair	754.0	14.1	17.3	17.8	20.6	30.3	126.00
Poor	533.3	7.4	12.5	14.7	21.1	44.2	194.79

¹Percent persons with \$0 charges includes persons who obtained prescriptions free of charge.²Estimates for the "other" race group were unreliable and are not shown separately but are included in the total.³The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 25 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 6

Percent distribution of payments for prescription drug use by noninstitutionalized, aged Medicare beneficiaries payment, by source of payment: United States, 1980

Characteristic	Total	Source of payment					Unknown source or unpaid amount
		Medicare	Medicaid	Private insurance	Out-of-pocket	Other	
Percent distribution							
Total	100.0	3.1	10.8	13.9	68.2	3.6	0.4
Age							
65-69 years	100.0	3.2	9.5	18.8	64.6	3.3	0.5
70-74 years	100.0	3.1	12.0	10.5	70.4	3.8	0.4
75-79 years	100.0	3.0	12.0	13.0	68.0	3.7	(1)
80 years or over	100.0	3.1	9.9	11.3	72.1	3.5	(1)
Sex							
Male	100.0	3.3	7.2	15.5	68.3	5.3	0.4
Female	100.0	3.0	12.9	13.1	68.1	2.6	0.4
Race ²							
White	100.0	3.2	9.0	14.5	69.6	3.4	0.3
Black	100.0	1.7	32.0	(1)	52.6	(1)	(1)
Annual family income							
Less than \$5,000	100.0	2.8	26.1	7.1	61.8	(1)	0.5
\$5,000-\$9,999	100.0	2.8	6.6	13.6	72.7	4.0	0.1
\$10,000-\$19,999	100.0	4.5	5.1	17.8	68.6	3.5	(1)
\$20,000 or more	100.0	1.7	7.3	17.8	67.4	5.3	(1)
Education							
Less than 8 years	100.0	2.5	20.6	7.2	65.4	3.7	(1)
8 years	100.0	4.0	8.9	11.9	71.5	3.3	0.6
9-11 years	100.0	2.5	14.7	12.3	65.5	4.9	(1)
12 years	100.0	4.9	6.5	14.4	70.9	3.0	(1)
13 years or more	100.0	1.8	(1)	25.4	67.3	(1)	0.4
Region							
Northeast	100.0	3.8	14.3	11.0	65.0	5.9	(1)
North Central	100.0	4.8	9.0	16.4	67.9	1.6	0.4
South	100.0	2.2	10.1	13.5	71.5	2.1	0.5
West	100.0	2.1	11.5	14.3	65.0	6.8	(1)
Type of community							
SMSA central city	100.0	3.1	11.0	14.4	68.7	2.4	(1)
SMSA remainder	100.0	2.9	9.3	15.6	66.5	5.4	0.3
Non-SMSA urban	100.0	3.2	10.6	13.0	69.0	4.1	(1)
Non-SMSA rural	100.0	3.4	13.3	11.4	69.5	(1)	(1)
Perceived health status ³							
Excellent	100.0	2.3	3.4	13.0	76.9	4.4	(1)
Good	100.0	3.2	8.3	12.8	71.0	4.5	0.2
Fair	100.0	3.6	10.0	13.8	68.2	3.8	0.5
Poor	100.0	2.9	19.6	16.2	59.4	1.5	(1)

¹Relative standard error is greater than 50 percent, or sample size is less than 20.²Estimates for the "other" race group were unreliable and are not shown separately but are included in the total.³The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 26 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 7

Percent distribution of prescriptions filled, by specification for noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Total	Generic	Brand name
Percent distribution			
Total	100.0	17.3	82.7
Age			
65-69 years	100.0	17.4	82.6
70-74 years	100.0	16.2	83.8
75-79 years	100.0	19.1	80.9
80 years or over	100.0	16.2	83.8
Sex			
Male	100.0	18.1	81.9
Female	100.0	16.8	83.2
Race ¹			
White	100.0	17.2	82.8
Black	100.0	18.5	81.5
Annual family income			
Less than \$5,000	100.0	16.0	84.0
\$5,000-\$9,999	100.0	16.8	83.2
\$10,000-\$19,999	100.0	17.9	82.1
\$20,000 or more	100.0	19.2	80.8
Education			
Less than 8 years	100.0	17.5	82.5
8 years	100.0	13.2	86.8
9-11 years	100.0	19.2	80.8
12 years	100.0	19.8	80.2
13 years or more	100.0	17.6	82.4
Region			
Northeast	100.0	18.8	81.2
North Central	100.0	15.5	84.5
South	100.0	12.9	87.1
West	100.0	26.3	73.7
Type of community			
SMSA central city	100.0	17.8	82.2
SMSA remainder	100.0	17.1	82.9
Non-SMSA urban	100.0	15.0	85.0
Non-SMSA rural	100.0	19.0	81.0
Perceived health status ²			
Excellent	100.0	17.3	82.7
Good	100.0	17.0	83.0
Fair	100.0	15.9	84.1
Poor	100.0	19.5	80.5

¹Estimates for the "other" race group were unreliable and are not shown separately but are included in the total.

²The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 27 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

As would be expected, the proportion of total charges paid by Medicaid decreased and that paid by private plans increased with increasing family income. Medicaid paid 26.1 percent of total prescription charges incurred by people in families with an annual income less than \$5,000. This percentage is greater than that paid by Medicaid for people in the higher family income groups. The proportion of total charges for prescription drugs paid by private plans increased as years of education increased. Medicaid paid a lower percentage of charges incurred by people who had at least 12 years of education.

People whose self-perceived health status was poor had a greater percentage of their expenditures paid by Medicaid and paid a smaller percentage out-of-pocket than did people with good or excellent self-perceived health status. For example, only 3.4 percent of total charges incurred by people considering themselves to be in excellent health was paid by Medicaid and 76.9 percent was paid out-of-pocket, as compared with 19.6 percent by Medicaid and 59.4 percent out-of-pocket among people considering themselves in poor health.

Generic Drug Use

Because of the typically lower cost of generic drugs compared to brand name drugs, it was of interest to examine the level of use of generic drugs as a possible factor in determining patterns of expenditures for prescription drugs. Utilization of generic and nongeneric prescription drugs among aged Medicare beneficiaries is presented in Table 7 for selected demographic characteristics. Generic drugs accounted for an estimated 17.3 percent of all prescriptions obtained by aged Medicare beneficiaries. This percent was fairly constant across the demographic subgroups, with one exception. Relative to the national pattern, prescription drug use by generic name was lower in the South (12.9 percent) and higher in the West (26.3 percent). In general, regional differences in generic drug use appeared to be consistent with regional differences in spending for prescription drugs cited earlier (Table 5).

Prescription Drug Use by Therapeutic Function

The percent distribution of the number of prescriptions obtained by the aged Medicare population for a selected set of therapeutic functions is given in Table 8. These data indicate that drug utilization was concentrated on relatively few therapeutic function categories. Prescriptions consisting of cardiovascular-renal agents or drugs used for relief of pain accounted for approximately one-half of all prescriptions obtained by aged Medicare beneficiaries. For the aged Medicare population, these two function categories accounted for 39.4 and 11.3 percent of all prescriptions, respectively.

Table 8

Percent distribution of prescriptions, by therapeutic function for noninstitutionalized,
aged Medicare beneficiaries: United States, 1980

Characteristic	Therapeutic function				
	Cardiovascular/ renal agents	Relief of pain	Affecting nervous system	Hormones and hormonal agents	Respiratory and allergy
Percent of total					
Total	39.4	11.3	8.3	7.3	7.0
Age					
65-69 years	36.7	11.2	8.8	10.2	7.8
70-74 years	40.8	11.4	8.9	6.4	7.6
75-79 years	39.3	11.3	9.0	6.5	5.5
80 years or over	42.3	11.0	5.4	4.2	6.4
Sex					
Male	41.9	10.9	7.6	6.8	7.8
Female	38.0	11.4	8.7	7.6	6.6
Race ¹					
White	39.0	11.1	8.7	7.4	7.0
Black	44.7	13.5	3.7	6.7	5.3
Annual family income					
Less than \$5,000	41.7	13.1	8.7	6.1	5.1
\$5,000-\$9,999	37.4	11.8	8.6	7.6	7.6
\$10,000-\$19,999	40.0	10.4	7.4	7.5	8.1
\$20,000 or more	38.7	9.0	8.9	8.2	6.8
Education					
Less than 8 years	42.8	11.1	7.2	7.2	6.6
8 years	36.8	12.0	9.1	6.8	7.2
9-11 years	39.6	11.8	7.2	9.8	8.8
12 years	38.4	10.5	10.5	6.7	5.2
13 years or more	38.4	10.8	8.0	6.3	7.3
Region					
Northeast	44.4	10.6	7.5	5.7	6.5
North Central	40.9	11.3	7.9	7.7	7.6
South	38.0	11.4	9.7	7.5	6.3
West	35.0	11.5	7.0	8.1	8.0
Type of community					
SMSA central city	39.3	11.0	8.6	7.4	7.1
SMSA remainder	38.6	11.2	7.0	7.5	6.9
Non-SMSA urban	39.2	12.2	8.8	5.5	8.2
Non-SMSA rural	40.8	10.8	9.7	8.5	6.0
Perceived health status ²					
Excellent	40.8	12.3	7.5	6.9	7.0
Good	39.7	10.6	7.6	7.6	8.1
Fair	39.9	11.7	8.8	7.6	6.4
Poor	37.3	10.9	9.1	6.8	6.3

See footnotes at end of table.

Table 8—Continued
Percent distribution of prescriptions, by therapeutic function for noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Therapeutic function				
	Gastrointestinal	Homeostatic/nutrient agents	Antimicrobial	Ophthalmology	All others
Percent of total					
Total	5.6	5.0	4.9	3.1	8.1
Age					
65-69 years	5.0	4.6	6.8	1.9	7.0
70-74 years	4.7	5.3	4.2	3.0	7.6
75-79 years	6.7	5.0	4.0	3.5	9.2
80 years or over	6.7	5.3	4.0	5.0	9.6
Sex					
Male	4.8	4.0	5.5	2.6	8.1
Female	6.0	5.6	4.6	3.4	8.1
Race ¹					
White	5.7	4.8	5.0	3.1	8.2
Black	4.7	7.5	3.6	3.9	6.4
Annual family income					
Less than \$5,000	5.6	4.4	3.8	2.9	8.6
\$5,000-\$9,999	5.4	4.7	5.6	3.4	7.9
\$10,000-\$19,999	5.7	5.2	4.6	3.2	8.1
\$20,000 or more	5.8	6.3	6.0	2.4	7.8
Education					
Less than 8 years	6.2	4.0	4.7	2.0	8.1
8 years	7.3	3.7	4.3	3.7	8.9
9-11 years	4.0	4.7	4.5	3.2	6.3
12 years	4.8	6.6	6.0	3.2	8.1
13 years or more	4.9	6.7	5.4	3.6	8.6
Region					
Northeast	4.7	6.2	4.0	2.3	8.1
North Central	4.7	5.3	5.6	2.3	6.7
South	6.5	4.1	4.8	3.1	8.5
West	5.9	5.4	5.2	4.8	9.0
Type of community					
SMSA central city	5.8	5.2	4.8	3.7	7.2
SMSA remainder	5.9	4.5	5.3	3.6	9.4
Non-SMSA urban	5.0	6.3	4.7	2.7	7.3
Non-SMSA rural	5.4	4.4	4.9	1.7	7.8
Perceived health status ²					
Excellent	4.1	4.4	6.3	3.8	7.0
Good	6.0	4.5	4.5	3.8	7.5
Fair	5.5	4.2	4.9	3.3	7.7
Poor	6.0	7.2	4.9	1.4	10.0

¹Estimates for the "other" race group were unreliable and are not shown separately but are included in the total.

²The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 28 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 9

**Prescription drug use and expenditures among noninstitutionalized, aged Medicare beneficiaries,
by poverty level: United States, 1980**

Poverty level	Beneficiaries		Prescriptions		Prescription charges		Average number of prescriptions per beneficiary	Average annual charge per beneficiary
	Number in millions	Percent	Number in millions	Percent	Amount in millions	Percent		
Total	23.7	100.0	287.5	100.0	\$2,314.2	100.0	12.1	\$97.68
Poor.....	4.6	19.4	62.9	21.9	495.5	21.4	13.7	107.85
Near-poor	9.2	38.8	113.1	39.3	911.9	39.4	12.3	99.23
Nonpoor	10.0	41.8	111.5	38.8	906.8	39.2	11.3	91.52

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 29 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Prescription drug utilization by therapeutic function category was relatively homogeneous among the demographic subgroups with the exception of some racial and regional differences. The percent of prescriptions consisting of cardiovascular-renal agents was higher in the Northeast (44.4 percent) than in the South (38.0 percent) or West (35.0 percent). Black people appeared to use a higher percentage of cardiovascular-renal agents (44.7 percent) than did white people (39.0 percent). Although this difference was not statistically significant, this finding was consistent with the fact that black people are more prone to cardiovascular and renal diseases than are white people (e.g., Moss and Scott, 1978).

Poor and Near-Poor Subgroups

During 1980, an estimated one in five aged Medicare beneficiaries were in families whose income was at or below the poverty level, two in five were in families whose income was above the poverty level but less than or equal to twice the poverty level, and two in five were in families whose income was above twice the poverty level. For purposes of this report, these three groups are referred to as the poor, the near-poor, and the nonpoor, respectively. Estimates of prescription drug utilization and expenditures are given in Table 9 for these three subgroups.

Poor aged Medicare beneficiaries accounted for 21.9 percent of prescription drugs used by the aged Medicare population, the near-poor accounted for 39.3 percent, and the nonpoor for 38.8 percent. These percents were essentially identical to the percents of the total noninstitutionalized aged Medicare population of these subgroups. Prescription drug charges were similarly distributed across the three subgroups. If the institutionalized population were included in the survey, the proportion of drugs used by the poor would probably have been greater than that shown in Table 9. The 1977 National Nursing Home Survey showed that Medicaid was the primary source of payment for about one-half of all nursing home residents (Van

Nostrand et al., 1979). Fisher (1980) showed that about 41 percent of the funds for the care of aged people in nursing homes was provided by Medicaid.

The average number of prescriptions obtained was higher among the poor (13.7) than the nonpoor (11.3) subgroup. No statistically significant differences were found among the three subgroups with respect to average annual charges for prescription drugs.

The average number of prescriptions and average annual charge per beneficiary for the poor, near-poor, and nonpoor subgroups by selected demographic characteristics are given in Tables 10 and 11. In general, categorization by income relative to the poverty level did not alter the basic relationships found earlier among the demographic subgroups, with the exception of region. Poor people in the Northeast appeared to have a higher number of prescriptions filled than did poor people in other regions. This may, in part, reflect regional differences in the coverage of prescription drugs by Medicaid programs, but these regional differences were not statistically significant.

Table 12 shows the percent of prescription drug charges paid from various sources for the poor, near-poor, and nonpoor subgroups. Medicaid paid 28.4 percent of total prescription drug charges incurred by poor beneficiaries. The proportion paid by Medicaid for near-poor beneficiaries (8.3 percent) was significantly less.⁴ The percentage of prescription drug charges paid by private health insurance was similar among poor and near-poor people (7.7 percent and 10.7 percent, respectively) and significantly higher among nonpoor people (20.6 percent). Near-poor people paid a higher percentage of their expenditure for prescription drugs out-of-pocket than did poor people.

The financial burden of prescription drugs was compared among the poor, near-poor, and nonpoor subgroups

⁴Table 12 indicates that Medicaid paid 4 percent of the charges incurred by nonpoor people. This is probably due to the longitudinality of NMCUES data. People are classified as nonpoor based on annual family income. It is possible that income varied over the survey, enabling a nonpoor family to be eligible for Medicaid during part of the year in which income was low.

Table 10

Average number of prescriptions filled by noninstitutionalized, aged Medicare beneficiaries, by poverty level¹: United States, 1980

Characteristic	Poor	Near-poor	Nonpoor
Mean			
Total	13.7	12.3	11.3
Age			
65-69 years	11.4	10.8	9.3
70-74 years	13.3	11.9	12.1
75-79 years	15.6	14.6	15.7
80 years or over	15.0	13.7	11.6
Sex			
Male	11.1	10.7	9.6
Female	14.8	13.4	12.7
Race ²			
White	13.9	12.7	11.5
Black	12.4	7.5	9.2
Annual family income			
Less than \$5,000	13.1	14.8	(3)
\$5,000-\$9,999	17.5	12.2	9.4
\$10,000-\$19,999	37.3	11.5	11.7
\$20,000 or more	(3)	(3)	11.0
Education			
Less than 8 years	14.0	13.4	10.7
8 years	15.4	13.5	13.7
9-11 years	12.3	12.5	10.4
12 years	11.6	8.9	10.6
13 years or more	13.6	12.6	11.3
Region			
Northeast	15.1	11.4	9.8
North Central	14.3	10.9	12.7
South	13.4	15.0	12.3
West	12.0	11.1	9.4
Type of community			
SMSA central city	10.6	11.3	10.4
SMSA remainder	16.1	11.4	11.1
Non-SMSA urban	11.9	15.5	12.3
Non-SMSA rural	15.8	12.7	12.3
Perceived health status ⁴			
Excellent	6.4	7.2	5.1
Good	10.2	11.0	10.2
Fair	15.2	14.0	17.5
Poor	27.0	21.4	24.8

¹Categorization of poor, near-poor, and nonpoor beneficiaries is based on annual family income relative to the 1980 U.S. Bureau of Census definition of poverty level.

²Estimates for the "other" race group were unreliable and have been excluded from the table.

³Relative standard error is greater than 50 percent, or sample size is less than 20.

⁴The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 30 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 11

Average prescription drug charges incurred by noninstitutionalized, aged Medicare beneficiaries, by poverty level¹: United States, 1980

Characteristic	Poor	Near-poor	Nonpoor
Total			
Total	\$107.8	\$99.2	\$91.5
Age			
65-69 years	97.5	88.6	80.7
70-74 years	111.3	99.9	95.3
75-79 years	112.9	118.1	116.5
80 years or over	110.9	97.4	94.9
Sex			
Male	92.5	87.0	80.4
Female	114.3	107.9	101.0
Race ²			
White	108.7	101.8	93.3
Black	100.6	68.3	73.1
Annual family income			
Less than \$5,000	103.0	111.0	(3)
\$5,000-\$9,999	140.0	101.0	82.8
\$10,000-\$19,999	277.7	86.5	97.7
\$20,000 or more	(3)	75.6	84.8
Education			
Less than 8 years	105.7	99.2	81.8
8 years	122.1	113.7	105.4
9-11 years	96.9	102.1	84.6
12 years	92.1	75.6	92.6
13 years or more	126.1	102.7	91.4
Region			
Northeast	110.9	85.7	74.2
North Central	113.9	86.0	107.2
South	107.2	122.7	100.4
West	97.6	93.8	76.1
Type of community			
SMSA central city	84.7	94.0	87.6
SMSA remainder	121.5	88.0	90.1
Non-SMSA urban	97.9	127.6	89.8
Non-SMSA rural	126.6	101.1	103.9
Perceived health status ⁴			
Excellent	49.0	54.1	42.2
Good	80.3	87.5	82.0
Fair	123.6	114.0	143.9
Poor	207.1	181.8	200.8

¹Categorization of poor, near-poor, and nonpoor beneficiaries is based on annual family income relative to the 1980 U.S. Bureau of Census definition of poverty level.

²Estimates for the "other" race group were unreliable and have been excluded from the table.

³Relative standard error is greater than 50 percent, or sample size is less than 20.

⁴The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 31 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 12

Percent distribution of payments for prescription drug use, by noninstitutionalized, aged Medicare beneficiaries, poverty level¹, and source of payment: United States, 1980

Poverty level	Total	Source of payment					Unknown source or unpaid amount
		Medicare	Medicaid	Private plans	Out-of-pocket	Other	
Percent distribution							
Total.....	100.0	3.1	10.8	13.9	68.2	3.6	0.4
Poor.....	100.0	3.0	28.4	7.7	58.7	1.9	0.5
Near-poor.....	100.0	2.7	8.3	10.7	74.1	3.9	0.4
Nonpoor.....	100.0	3.6	3.8	20.6	67.4	4.1	(1)

¹Categorization of poor, near-poor, and nonpoor beneficiaries is based on annual family income relative to the 1980 U.S. Bureau of the Census definition of poverty level.

²Relative standard error is greater than 50 percent, or sample size is less than 20.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 32 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

by considering average annual charges and out-of-pocket expenditures as a percent of median family income, given in Table 13. Both percentages were higher for poor people than for near-poor or nonpoor people.⁵ The relative financial burden of out-of-pocket expenditures for prescription drugs was six times greater for the poor than for nonpoor people.

The use of generic drugs among the poor, near-poor, and nonpoor subgroups, given in Table 14, did not differ significantly from that found for the overall aged Medicare population.

High Utilization and Expenditure Subgroups

In this section, prescription drug utilization and expenditure patterns are described for two groups of high drug consumers among the noninstitutionalized, aged Medicare population. The high-use subgroup refers to persons in the top 5 percent of the population with respect to the number of prescriptions filled. The high-expenditure subgroup refers to persons in the top 5 percent with respect to prescription drug charges. The total number of prescriptions, total prescription charges, average prescriptions per beneficiary, and average annual charges are presented in Table 15 for these two subgroups.

The high-use subgroup accounted for 24.9 percent of all prescriptions and 23.6 percent of total charges among aged Medicare beneficiaries. The averages for the high-use subgroup were 58.8 prescriptions and \$449 of charges. These averages were almost five times greater than the averages for the total aged Medicare population.

People in the high-expenditure subgroup obtained 21.7 percent of all prescriptions and incurred 25.7 percent of total charges. For this group, the averages were 52.7 prescriptions and \$503 of charges, roughly four times the average use and five times the average annual charge for the total aged Medicare population.

Table 16 presents the per beneficiary average number of prescriptions for the high-use and high-expenditure subgroups by selected demographic characteristics. Demographic differences in the average number of prescriptions filled among the high-use and high-expenditure subgroups were not significant except with respect to self-perceived health status. People with poor self-perceived health status had more prescriptions filled per beneficiary than did people with fair or good self-perceived health status.

Table 16 also gives the average annual charges for prescription drugs among the high-use and high-expenditure subgroups by selected demographic characteristics. Patterns in prescription drug charges with respect to age occurring in the high-use and high-expenditure subgroups differed from those occurring in the aged Medicare population cited earlier. People 65-69 years of age in the high-use subgroup had an average annual charge of \$568 per beneficiary for prescription drugs. This was roughly 40 percent greater than average charges among the older age groups. For the high-expenditure subgroup, the group 65-69 years of age also had the highest average charge, but the differences between age groups were not as great as for the high-use subgroup. People with a poor self-perceived health status incurred charges that, on average, were greater than those incurred by people with a better self-perceived health status in both high-use subgroups, although not all differences were statistically significant.

The distributions of source of payment for prescription drug charges among the high-use and high-expenditure subgroups are given in Table 17. People in the high-expenditure subgroup had a larger percent of their total

⁵Estimates of the standard errors of median family income were not available, thus no statistical tests were performed to assess differences in prescription drug charges as a percent of median family income.

Table 13**Prescription drug charges as percent of median annual family income for noninstitutionalized, aged Medicare beneficiaries, by poverty level¹: United States, 1980**

Poverty level	Average annual charge for prescription drugs	Estimated median annual family income	Average annual charge as percent of median income	Out-of-pocket expenditure as percent of median income
Total	\$97.68	\$9,410	1.0	0.7
Poor	107.85	3,480	3.1	1.8
Near-poor	99.23	7,430	1.3	1.0
Nonpoor	91.52	18,040	0.5	0.3

¹Categorization of poor, near-poor, and nonpoor beneficiaries is based on annual family income relative to the 1980 U.S. Bureau of the Census definition of poverty level.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 14**Percent distribution of prescriptions filled by specification for noninstitutionalized, aged Medicare beneficiaries, by poverty level¹: United States, 1980**

Generic drug indicator	Poor	Near-poor	Nonpoor
Total	100.0	100.0	100.0
Generic	15.7	16.6	18.8
Brand name	84.3	83.4	81.2

¹Categorization of poor, near-poor, and nonpoor beneficiaries is based on annual family income relative to the 1980 U.S. Bureau of the Census definition of poverty level.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 33 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor. Several statistics in this table have RSE's that exceed 25 percent.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 15**Prescription drug use and expenditures among the high-use and high-expenditure subgroups of the noninstitutionalized, aged Medicare beneficiaries: United States, 1980**

Use or expenditure category	Prescriptions		Prescription charges		Average number of prescriptions per beneficiary	Average annual charge per beneficiary
	Number in millions	Percent	Amount in millions	Percent		
Total aged Medicare beneficiaries.	287.5	100.0	\$2,314.2	100.0	12.1	\$97.68
High-use subgroup ¹	71.6	24.9	546.4	23.6	58.8	448.64
High-expenditure subgroup ¹	62.5	21.7	595.5	25.7	52.7	502.73

¹The high-use subgroup and high-expenditure subgroup overlap.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 34 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 16

Average number of prescriptions and average prescription drug charges per beneficiary for high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	High-use subgroup		High-expenditure subgroup	
	Average number of prescriptions	Average charges	Average number of prescriptions	Average charges
Total	58.8	\$448.64	52.7	\$502.73
Age				
65-69 years	62.3	568.20	53.6	553.59
70-74 years	54.8	396.89	47.9	455.16
75-79 years	58.7	411.86	57.9	516.49
80 years or over	60.2	400.64	53.0	459.01
Sex				
Male	55.3	451.90	49.9	515.64
Female	60.4	447.18	54.1	496.48
Race ¹				
White	59.3	447.61	53.4	505.08
Black	45.4	464.82	41.3	462.89
Annual family income				
Less than \$5,000	60.9	468.50	56.0	503.22
\$5,000-\$9,999	57.8	484.89	51.7	521.37
\$10,000-\$19,999	57.6	429.32	51.8	488.30
\$20,000 or more	59.9	403.74	51.5	492.80
Education				
Less than 8 years	54.1	406.58	51.8	455.32
8 years	59.1	430.60	50.7	471.89
9-11 years	56.9	460.68	52.4	496.55
12 years	69.0	517.35	53.9	568.07
13 years or more	61.7	490.57	58.1	602.52
Region				
Northeast	65.8	424.02	59.2	497.23
North Central	59.9	488.13	53.8	550.42
South	55.9	455.45	51.0	484.75
West	54.7	376.43	44.1	476.23
Type of community				
SMSA central city	53.4	380.33	43.9	451.71
SMSA remainder	63.4	463.45	58.0	499.63
Non-SMSA urban	57.7	473.63	51.9	545.41
Non-SMSA rural	57.1	463.44	53.4	529.53
Perceived health status ²				
Excellent	56.4	430.16	52.6	467.12
Good	55.8	383.02	47.4	456.85
Fair	52.9	430.92	46.4	469.40
Poor	66.9	512.65	64.1	578.74

¹Estimates for the "other" race group were unreliable and have been excluded from the table.

²The health status classification excludes a small number of persons whose perceived health status was unknown.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 35 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor.

Table 17**Percent distribution of payments for prescription drug charges among high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries, by source of payment: United States, 1980**

Item	Source of payment					Unknown source or unpaid amount
	Medicare	Medicaid	Private plans	Out-of-pocket	Other	
Percent distribution						
Total persons.....	3.1	10.8	13.9	68.2	3.6	0.4
High-use subgroup	4.2	10.1	22.0	59.6	3.6	(1)
High-expenditure subgroup	5.1	11.8	23.2	56.6	2.9	(1)

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 36 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

Table 18**Percent distribution of prescriptions filled, by specification for high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries: United States, 1980**

Generic drug indicator	High-use subgroup	High-expenditure subgroup
Total	100.0	100.0
Generic	17.1	12.3
Brand name	82.9	87.7

NOTE: The relative standard error (RSE) estimates for the statistics in this table are presented in Table 37 in Appendix IV. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6-15 percent, good; 16-25 percent, fair; and more than 25 percent, poor.

SOURCE: National Medical Care Utilization and Expenditure Survey.

charges for prescription drugs paid by private insurance (23.2 percent) and a smaller percent paid out-of-pocket (56.6 percent) than did aged Medicare beneficiaries in general (13.9 percent by private insurance and 68.2 percent out-of-pocket). Amounts paid by various sources did not differ significantly between the high-use subgroup and the total aged Medicare population.

The use of generic versus brand name prescription

drugs is given in Table 18 for the high-use and high-expenditure subgroups. Generic drug usage was lower among people in the high-expenditure subgroup (12.3 percent) than among the overall aged Medicare population (17.3 percent, see Table 7). Generic drug use among people in the high-use subgroup did not differ from that in the overall aged Medicare population.

Discussion

The findings of the report have shown that prescription drug expenditures of \$2.3 billion among noninstitutionalized, aged Medicare beneficiaries represented a significant proportion (30.2 percent) of the total U.S. expenditure for prescription drugs in 1980. Noninstitutionalized, aged Medicare beneficiaries incurred, on average, over three times the charges incurred for prescription drugs by people under 65 years of age. Among this group, prescription drugs accounted for 5.5 percent of all personal health care expenditures.

NMCUES results for prescription drug use and expenditures presented in this report are consistent with results from other recent studies. An increasing trend in average annual charge per beneficiary was apparent. However, accounting for a parallel increase in prescription size, charges per dosage did not rise as dramatically. This, in conjunction with an apparent decreasing trend in prescription charges as a percent of median family income, supports recent arguments that the financial burden of prescription drug use among aged Medicare beneficiaries has not increased as rapidly as that due to other health care costs.

Differences in prescription drug use and expenditures among demographic subgroups as estimated from NMCUES data were also consistent with findings from other studies. Population subgroups with high use and expenditures were

females, people 75-79 years of age, people living in the South, and people perceiving themselves to be in poor health. It should be noted that regional differences in use and expenditures probably reflected differences in physician prescribing practices. For example, the two regions with the highest rate of generic drug use, the Northeast and the West, also had average charges per beneficiary below the national average.

Although overall spending patterns for prescription drugs did not vary significantly among poor, near-poor, and nonpoor beneficiaries, prescription drug charges appeared to be a larger out-of-pocket financial burden for poor people than for near-poor or nonpoor people when measured as a percent of median family income. This occurred despite the fact that Medicaid paid a substantial percent of these charges.

NMCUES data indicated that a minority of beneficiaries accounted for a significant portion of prescription drug charges. One of five aged Medicare beneficiaries spent over \$160 for prescription drugs during 1980. Five percent of the aged Medicare population incurred \$354 or more in drug charges and accounted for about 26 percent of total charges. These results indicate that prescription drug costs, like the costs of other medical services, were not evenly distributed among the aged Medicare population.

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Appendix I.

Definition of Terms

Terms Relating to Prescription Drugs

Prescription drug—This is any drug, medication, or biological agent that is prescribed by a physician. The number of prescriptions refers to the total number of times that a respondent obtained a prescription drug, including refills of previous prescriptions and drugs administered free of charge from a clinic or physician's office.

Prescription drug charges—These refer to the total amounts charged for prescriptions.

Therapeutic function—This is the medical use for which the prescription drug was prescribed. The name of each prescription drug that was reported was classified as one of 19 possible therapeutic function categories defined in the *American Medical Association Drug Evaluations, Third Edition* (1977). These categories are as follows:

- Cardiovascular—Renal Agents.
- Agents Affecting Blood Formation, Volume, and Coagulability.
- Homeostatic and Nutrient Agents.
- Drugs Used in Anesthesia.
- Drugs Used for Relief of Pain.
- Drugs Affecting the Central Nervous System.
- Hormones and Agents Affecting Hormonal Mechanisms.
- Drugs Used in Respiratory and Allergic Disorders.
- Antimicrobial Agents.
- Parasiticidal Agents.
- Agents Applied Locally.
- Drugs Used in Ophthalmology.
- Otologic Agents.
- Drugs Used to Treat Neuromuscular Disorders.
- Gastrointestinal Agents.
- Oncolytic Agents.
- Immunologic Agents.
- Antagonists and Antidotes.
- Miscellaneous.

Generic drugs—These are drugs that are not sold under any brand name and drugs that are not trademarked.

Source of payment—For a prescription, this refers to a program or insurance plan that covered some part of the total amount charged. Possible sources of payment are Medicare, Medicaid, private insurance, and other plans or programs.

Out-of-pocket costs—These refer to the amount of the

total charge paid by the respondents or their families.

Age—This refers to the age of the person as of January 1, 1980. In order to include all aged Medicare beneficiaries in the analyses presented in this report, all persons who were 64 years of age on January 1, 1980 (and thus became 65 years of age during the survey year) and who reported being covered by Medicare at some time during the year were included. Thus, the lowest age category in the tables, 65-69 years of age, includes persons who were 64 years of age on January 1, 1980.

Sex—The gender of the person was recorded by the interviewer as observed.

Race—Each person was classified as "white," "black," or "other." The "other" race category includes American Indian, Alaskan Native, Asian, and Pacific Islander. The race of persons 17 years of age or over was reported by the household respondent; the race of persons under 17 years of age was derived from the race of the wife of head of household (if there was one) or the head of household.

Education—This indicates the number of years of school completed for people 17 years of age or over. Only years completed in regular schools, where persons are given a formal education, were included. A "regular" school is one that advances a person toward an elementary or high school diploma or a college, university, or professional school degree. Thus, education in vocational, trade, or business schools outside the regular school system was not counted in determining the highest grade of school completed.

Annual family income—Each person was classified according to the total 1980 income of the family of which he or she was a member at the time of first interview. The income recorded was the total of all income received by members of the family during 1980.⁶ Income from all sources was included; e.g., wages, salaries, rents from property, pensions, and help from relatives. Within the household, all people related to each other by blood, marriage, adoption, or foster care status constituted a family. Unrelated individuals were classified according to their own income.

⁶The processing of interest income was not completed in time for use in this report; thus, annual family income does not include income derived from interest on savings accounts or bonds. For certain aged Medicare beneficiaries, this will substantially underreport their annual family income.

Table 19

Nonfarm poverty levels: United States, 1980¹

Average number of persons in family	Age of head	Poverty level	
		Male head	Female head
1.0-1.4	< 65	\$4,441	\$4,109
	≥ 65	3,990	3,938
1.5-2.4	< 65	5,568	5,415
	≥ 65	4,988	4,946
2.5-3.4	—	6,608	6,386
3.5-4.4	—	8,418	8,382
4.5-5.4	—	9,976	9,878
5.5-6.4	—	11,274	11,227
6.5 or more	—	13,986	13,767

¹1980 nonfarm levels are from the *Current Population Reports*, Series P-60, No. 127.

Poverty level—This is the ratio of family income to the 1980 poverty levels published by the Bureau of the Census, controlling for family size and age and sex of head of family. Table 19 gives the poverty level definitions used.

Geographic area—The States were grouped into four “regions.” These regions correspond to those used by the U.S. Bureau of the Census and are as follows:

- Northeast—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania.
- North Central—Michigan, Wisconsin, Ohio, Indiana, Illinois, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

- South—Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas.
- West—Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii.

Type of community—Households were identified as being located either inside or outside of a standard metropolitan statistical area (SMSA). The definitions and titles of SMSA’s are established by the U.S. Office of Management and Budget with the advice of the Federal Committee on Standard Metropolitan Statistical Areas. Households located inside SMSA’s are further classified as being located inside the SMSA’s central city (called “central city”) or not (“other”). Households located outside of SMSA’s are classified as “urban” if they are located in (1) places of 2,500 inhabitants or more that are incorporated as cities, villages, boroughs (except in Alaska), and towns (except in New England, New York, and Wisconsin), but excluding persons living in the rural portions of extended cities; (2) unincorporated places of 2,500 inhabitants or more; or (3) other territory, incorporated or unincorporated, included in urbanized areas. Otherwise, households that are located outside of SMSA’s are classified as “rural.”

Perceived health status—This represents the household respondent’s judgment of the health status of the person relative to others of the same age. The possible categories include excellent, good, fair, poor, and unknown.

Appendix II. Statistical Design

The National Medical Care Utilization and Expenditure Survey comprised two separate sample survey components that used identical data collection instruments and methods. These two survey components are the National Household Survey (HHS) and the State Medicaid Household Survey (SMHS). HHS employed a multistage probability sample of the civilian noninstitutionalized population of the United States. SMHS employed multistage probability samples of households which contained a Medicaid-eligible person in the States of California, Michigan, New York, or Texas.

The HHS sample was obtained by combining the national general purpose area samples of the Research Triangle Institute and the National Opinion Research Center. The structure of these samples is similar and will be described in aggregate. The first-stage sample consists of 135 primary sampling units (covering 108 separate geographic areas) which are counties, parts of counties, or groups of contiguous counties. The second-stage sample

consists of 809 sampling units which are the U.S. Bureau of the Census enumeration districts or block groups. The third-stage sample comprises 809 smaller area segments. Ultimately, a sample of approximately 6,600 households responded to the fourth-stage sample. This yielded a probability sample of about 17,900 people.

To provide a coordinated set of samples for SMHS, clustered list samples of Medicaid families or "cases" were drawn from the November 1979 Medicaid eligibility files for each of the four States. The samples were clustered using the five-digit ZIP codes contained in the address field of the eligibility records. A total of 100 primary ZIP-code area sampling units were selected in each State. A sample of approximately 4,900 Medicaid households containing about 13,700 people responded. Individual State samples were balanced (stratified proportionately) in their distribution over the categories of eligibility—Aid to Families With Dependent Children, Aged, and Disabled, and State Only⁷.

⁷Texas did not have a State-only program during 1980.

Appendix III. Weighting and Imputation

Weights

The individuals who were eligible for inclusion in the NMCUES samples were the civilian noninstitutionalized residents of the initial sample of housing units or Medicaid cases. Data from these initially eligible ("key") individuals were to be collected only for the time periods in which they were eligible; that is, data were gathered for the period of time in 1980 in which they were civilian and noninstitutionalized residents of the United States. Children born to key sample individuals during 1980 were eligible from their times of birth, and eligible individuals who died were considered eligible until their times of death. Further, individuals who were ineligible for inclusion in NMCUES in the first round but later returned to a sample household from the military, from an institution, or from foreign residency were included as key individuals from the date of their return. Sample persons were designated as survey respondents if they provided data for one-third or more of the days for which they were survey-eligible during 1980.

For the interpretation of NMCUES data, adjusted sampling weights are needed to reflect the complex design that was used in the collection of the data. These weights may be viewed as inflation factors to account for the number of persons in the target population that the associated sample persons represent. The weights have been adjusted for the potential biasing effects of systematic nonsampling errors related to total survey nonresponse and sampling frame undercoverage. Nonresponse occurs when an individual refuses to participate in the survey. Undercoverage occurs when the units comprising the sampling frame do not provide access to all of the eligible target population members.

The NMCUES HHS sample initially identified a set of sample households. Data collection was then attempted for all eligible persons within each sample household. Thus, undercoverage and nonresponse can occur for an entire household or for individuals within a household. For this reason, a two-step weight adjustment process was adopted. The first step resulted in adjusted household-level weights. The person-level weights were then derived from adjusted household weights.

The initial weight associated with a household was the inverse of its sample selection probability. The weights of the responding households were then ratio-adjusted to

1980 Current Population Survey estimates of the number of eligible households in the United States for subgroups defined by race, sex, and age of the head of household, and by the number of persons in the household. This provided a combined adjustment for both nonresponse and undercoverage of households. Since all eligible persons in a household were taken into the sample, the adjusted weight for a sample person's household provided the initial person-level weight for an individual. The initial weights of the responding persons were ratio-adjusted to estimates of the size of the eligible population in 1980 that were obtained from the U.S. Bureau of the Census for subgroups defined by age, race, and sex.⁸

The SMHS analysis weights were developed in three steps. First, a responding Medicaid case was assigned a Medicaid case weight, the inverse of its selection probability. The weights of the responding Medicaid cases were then ratio-adjusted to counts of the number of eligible cases on the sampling frame. Second, Medicaid household weights were generated from the case weights. Since each Medicaid household may be associated with one or more Medicaid cases, the household weights were adjusted to accurately reflect each household's probability of selection. Third, the final person-level weights were formed by first associating the appropriate adjusted household weight with each responding person. The person-level weights were then ratio-adjusted to November 1979 Medicaid eligibility file counts of case members.

Imputation

During the course of the 1-year data collection period, some attrition of the initial sample took place. This occurred when sample members who responded to the first round of interviewing did not participate in subsequent rounds. When an individual failed to respond for the entire year, health care utilization data are missing for the nonresponding time period. To compensate for this source of bias, data were imputed to part-year respondents for the

⁸At the time this report was produced, estimates of the size of the eligible population subgroups based on the 1980 Decennial Census were not available. The best population size estimates available from the U.S. Bureau of the Census were used to produce this report.

portion of the year that they did respond. The data were taken from full-year respondents with similar characteristics. Overall, attrition affected about 5 percent of the originally responding sample members.

Missing questionnaire items were either imputed logically or statistically. Logical imputation was used whenever other data gave a good indication of the appropriate response. For example, missing racial classifications were inferred from other household members. Statistical imputation was used to complete missing items that could not be logically inferred. Generally, an item was statistically imputed by assigning a value from a responding person with similar characteristics to those of the nonrespondent. Table 20 presents the percent of imputed data for many important variables.

Table 20

**Percent of data imputed for several variables
(HHS and SMHS combined)**

Variable	Percent imputed
Age.....	0.2
Sex.....	0.5
Race.....	22.3
Hispanic origin.....	22.5
Education.....	1.5
Functional limitation score.....	5.8
Perceived health status.....	1.4
Nights in hospital.....	6.7
Charges (HHS only)	
Emergency room.....	39.1
Outpatient department.....	51.0
MD/DO.....	22.0
Hospital inpatient.....	37.0
MD/DO inpatient.....	24.0
Dental.....	14.0
Prescribed medicine and other medical expenses.....	20.0

NOTES: HHS is national household survey. SMHS is State Medicaid household survey.

Also, 12 different sources of income were collected (employment, veteran's payments, unemployment, worker's compensation, Supplemental Security Income, Social Security, public assistance, pension, cash payments, interest, dividends, and other). Total income was defined as the sum of the 12 sources. Employment income was logically imputed for 2.1 percent and statistically imputed for 9.4 percent of the sample members. All 12 income sources were reported by 63.8 percent of the sample members, and 87.4 percent had no more than one source imputed.

Disability days and employment history were both collected separately for each round of interviewing. These variables were imputed only for the portion of the year for which they were missing. Table 21 presents the percent of sample persons with complete data for the year for these variables.

Health insurance is used in this report as a generic term for all types of insurance, prepayment, and tax-supported programs in which a private or public program

Table 21
**Percent of persons with complete data for
disability days and employment variables
(HHS and SMHS combined)**

Variable	Percent with complete data
Employment	
Total weeks worked	
Main job	87.4
Second job	82.4
Hours worked per week	
Main job	86.0
Second job	81.5
Disability days	
Bed days	83.9
Cut down days	83.2
Work loss days	84.4
Work loss days spent in bed	81.4

NOTES: HHS is national household survey. SMHS is State Medicaid household survey.

receives prepayment or reimburses providers for services delivered to persons covered by the program. Data concerning health insurance coverage were collected in each of five data collection rounds in several ways. Respondents were asked if they were covered at the time of the interview by any of several kinds of insurance. Sources of payment for each reported use of service were also collected. Lastly, information on employment, income, age, and participation in income redistribution programs, which are all highly related to insurance coverage, was collected and can be used to infer some kinds of coverage.

Four categories of coverage were created from the NMCUES data. These are (along with their constituent parts):

1. Private health insurance.
 - Commercial/independent insurers.
 - Blue Cross/Blue Shield.
 - HMO.
 - Other prepaid health plans.
 - Union name.
 - School name.
 - Insurance, not otherwise specified.
2. Medicare.
3. Medicaid.
4. Other public programs.
 - CHAMPUS/CHAMPVA.
 - Veterans' Administration.
 - Indian Health Service.
 - Federal Government.
 - Military.
 - State/local government.
 - Public assistance, not otherwise specified.

Respondents were initially classified as being covered or not covered on an interview date (or on December 31, 1980) by each of the four classes of insurance listed above, based on their answers to questions concerning their

coverage on the date of interview. The insurance coverage of a respondent on the date of an interview was then ascribed to the respondent's entire reference period for the interview. The reference period extended from the date of the respondent's previous interview (or on January 1, 1980) to the date of the current interview.

The following edits and logical imputations were then completed to produce the final health insurance coverage variables:

1. Any person who was 64 years of age on January 1, 1980, and who reported being covered by Medicare on a particular date was considered covered by Medicare from that date to the end of 1980.
2. Any person who was 65 years of age or over on January 1, 1980, and ever reported being covered by Medicare during 1980 was assigned Medicare coverage for the entire year.
3. Any person who reported Supplemental Security Income (SSI), Aid to Families With Dependent Children

(AFDC), or some other form of State or local welfare as a source of income for 9 months or more during 1980 was assigned Medicaid coverage for the entire year.

4. Any person who was not over 21 years of age and living with a person 22 years of age or over who reported AFDC or some other form of State or local welfare as a source of income for 9 months or more during 1980 was assigned Medicaid coverage for the entire year.
5. Any person who reported being covered by Medicaid at two interviews immediately bracketing an intervening interview at which Medicaid was not reported was considered to have been covered by Medicaid during the reference period of the intervening interview.
6. Any person who reported one of the above-listed four categories of insurance as a source of payment for a utilization was considered covered by that type of insurance for the entire reference period of the interview during which the utilization was reported.

Appendix IV. Reliability of Estimates

The estimates presented in this report are based on a probability sample of the population rather than the entire population and hence are subject to sampling variability. Sampling variability occurs because observations are made only on a sample, not on the entire population. The particular sample that was used in this survey is one of a large number of possible samples that could have been selected using the same sample design. Estimates derived from different samples would differ from each other. The standard error of a survey estimate is a measure of the variation among the estimates from all possible surveys. Thus, the standard error is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. The relative standard error is defined as the standard error of the estimate divided by the absolute value of the quantity being estimated. Tables of estimated relative standard errors for estimates presented in this report are provided in Tables 22 through 37. The estimated standard error of a sample statistic can be found by multiplying the estimated relative standard error by the absolute value of the statistic.

The sample estimate and an estimate of its standard error together permit the construction of an interval estimate with prescribed confidence that the interval includes the average result of all possible samples (for a given sample design). These interval estimates are such that:

1. In approximately two-thirds of the possible samples, an interval from one standard error below the estimate to one standard error above the estimate would include the average value of all possible samples. Such an interval is called a 67-percent confidence interval.
2. Approximately nineteen-twentieths of the possible sample intervals from two standard errors below the estimate to two standard errors above the estimate would include the average value of all possible samples. Such an interval is called a 95-percent confidence interval.

3. For almost all the possible samples, the interval from three standard errors below the estimate to three standard errors above the estimate would include the average value of all possible samples.

Estimated relative standard errors have been provided since they are free of the effects of scale and are more readily interpretable. For example, an estimate of \$10 per visit with a standard error of 10 would have a relative standard error of 1.0 and would generally be regarded as being unreliably estimated. On the other hand, an estimate of \$100 per visit also with a standard error of 10 would have a relative standard error of 0.10 and would usually be considered relatively reliable.

In general, estimates for small subgroups tend to be relatively unreliable. However, the magnitude of the sampling error that is tolerable depends on the conclusions being drawn. The precision of a statistic with an RSE of 5 percent or less is usually considered to be excellent; 6 to 15 percent, good; 16 to 25 percent, fair; and more than 25 percent, poor. The reader should be aware that some estimates in this report may have percent relative standard errors in excess of 25 percent. Statistics with relative standard errors this large are generally viewed as not precisely estimated and should be interpreted cautiously. All estimates with a percent relative standard error greater than 50 percent or based on a sample size less than 20 have been suppressed from this report.

The standard error of the difference between statistics can be approximated by the square root of the sum of squares of the standard error estimates for the two statistics. This approximation ignores the covariance between the two statistics. The approximation will be conservative (too large) for positively correlated statistics and liberal (too small) for negatively correlated statistics.

Table 22**Percent relative standard errors for Table 1, prescription drug use and expenditures: United States, 1980**

Characteristic	Persons		Prescriptions		Prescription charges		Average number of prescriptions per person	Average annual charge per person
	Number in millions	Percent	Number in millions	Percent	Number in millions	Percent		
Total	2.44	0.00	3.31	0.00	3.28	0.00	2.73	2.88
Aged Medicare beneficiaries ..	4.86	4.22	6.02	3.96	6.00	4.01	3.75	3.59
Under 65 years of age	2.51	0.51	3.12	1.69	3.15	1.86	2.66	3.01

Table 23**Percent relative standard errors for Table 2, prescription drug use, by aged beneficiaries: United States, 1980¹**

Year	Percent of aged beneficiaries using prescription drugs	Average number of prescriptions per beneficiary	Average annual charge per beneficiary	Average charge per prescription
1980.....	4.52	3.75	3.59	1.31

¹ Relative standard errors are provided for NMCUES data only.

Table 24

Percent relative standard errors for Table 4, prescription drug utilization among noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Number of prescriptions in millions	Persons without prescriptions	Persons with 1-4 prescriptions	Persons with 5-9 prescriptions	Persons with 10-20 prescriptions	Persons with 21 or more prescriptions	Average number of prescriptions per beneficiary
Total.....	6.02	4.52	5.06	5.21	3.95	4.99	3.75
Age							
65-69 years	7.91	6.53	6.58	8.03	6.67	8.52	5.31
70-74 years	7.84	8.63	8.64	9.09	8.09	7.96	5.04
75-79 years	10.82	13.84	13.30	11.31	9.65	9.80	7.21
80 years or over.....	11.08	15.02	10.23	10.69	11.44	12.00	8.04
Sex							
Male.....	7.92	6.79	7.50	8.19	7.41	7.64	5.32
Female.....	6.44	5.75	5.87	6.74	5.22	5.40	4.06
Race							
White.....	5.88	4.56	5.05	5.14	3.93	4.91	3.73
Black.....	19.55	18.45	22.66	26.39	23.81	27.55	13.03
Annual family income							
Less than \$5,000.....	10.21	10.28	11.98	10.53	9.39	10.35	6.82
\$5,000-\$9,999	8.61	9.23	8.70	8.58	8.28	8.52	5.63
\$10,000-\$19,999	9.08	8.67	8.66	9.80	10.49	8.40	6.71
\$20,000 or more.....	10.30	13.30	9.28	12.17	10.88	15.10	8.51
Education							
Less than 8 years	10.71	9.51	10.08	11.90	9.11	8.94	7.12
8 years	8.41	9.96	10.99	11.67	9.01	9.19	7.11
9-11 years	8.95	11.44	12.65	10.76	11.58	11.93	6.13
12 years	10.31	8.46	11.53	10.19	9.17	10.21	6.16
13 years or more.....	11.37	12.55	11.55	10.26	10.09	11.56	8.52
Region							
Northeast	11.79	6.10	10.29	9.70	7.67	11.28	9.05
North Central	11.53	9.36	7.64	8.96	8.61	9.15	6.40
South.....	12.55	9.30	11.01	10.79	7.31	8.16	6.63
West	18.59	10.05	13.57	12.07	7.11	10.76	6.52
Type of community							
SMSA central city	10.35	9.38	8.76	10.70	8.06	9.24	5.99
SMSA remainder	10.77	7.66	8.74	6.47	7.12	7.56	5.17
Non-SMSA urban	9.70	13.75	11.97	9.36	9.36	9.51	8.61
Non-SMSA rural	12.63	10.21	13.08	12.19	9.99	15.49	11.15
Perceived health status							
Excellent	10.41	7.55	8.12	10.51	10.37	17.08	6.17
Good	7.61	7.64	6.15	7.33	7.41	9.21	5.05
Fair	7.25	11.35	9.71	12.33	7.08	6.59	4.95
Poor	11.11	22.07	17.34	20.22	11.70	8.02	7.91

Table 25

Percent relative standard errors for Table 5, prescription drug charges among noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Total charges	Persons with \$0	Persons with \$1-\$30	Persons with \$31-\$75	Persons with \$76-\$160	Persons with more than \$160	Average charges per beneficiary
Total.....	6.00	4.33	4.84	4.95	4.03	4.86	3.59
Age							
65-69 years	7.94	66.3	5.85	7.97	7.65	7.73	5.47
70-74 years	8.38	8.33	9.07	8.88	9.39	8.13	5.23
75-79 years	10.49	13.77	12.83	12.25	10.01	9.92	7.13
80 years or over.....	11.50	14.74	9.63	12.17	10.19	12.80	7.47
Sex							
Male.....	8.13	6.66	7.87	7.76	7.00	8.63	5.96
Female.....	6.35	5.56	5.58	6.56	5.21	5.17	3.66
Race							
White.....	5.85	4.34	4.82	4.90	4.18	4.61	3.48
Black	20.20	18.45	22.09	21.48	16.82	23.77	14.32
Annual family income							
Less than \$5,000.....	10.02	10.33	10.88	10.77	8.46	10.50	6.88
\$5,000-\$9,999	8.88	8.67	8.98	8.20	9.78	8.36	6.27
\$10,000-\$19,999	8.99	8.42	8.57	9.13	8.65	9.70	6.68
\$20,000 or more	10.65	13.48	10.07	11.39	10.23	12.80	8.29
Education							
Less than 8 years	10.83	9.34	8.88	13.30	8.05	10.32	7.23
8 years	8.34	9.81	10.51	11.68	10.23	9.02	6.90
9-11 years	9.11	11.20	13.32	10.39	12.05	10.12	6.69
12 years	10.68	8.54	11.17	10.16	10.36	9.80	5.93
13 years or more	10.67	12.53	10.56	9.58	9.63	11.09	8.02
Region							
Northeast	10.96	6.45	10.00	10.74	11.26	11.24	7.26
North Central	11.50	8.88	9.27	6.35	7.70	8.23	5.96
South.....	11.93	9.08	9.01	10.83	6.48	8.34	6.80
West	19.42	8.91	12.09	10.29	8.17	9.56	6.97
Type of community							
SMSA central city	10.36	9.21	9.11	8.91	9.48	8.80	5.55
SMSA remainder	10.88	7.57	8.43	7.00	5.78	7.27	4.88
Non-SMSA urban	10.73	13.45	12.76	10.97	6.82	11.08	9.59
Non-SMSA rural	12.82	8.66	9.06	15.95	11.82	12.38	10.78
Perceived health status							
Excellent	10.59	7.39	7.91	9.79	9.24	17.93	7.45
Good	7.46	7.52	7.04	8.10	7.38	8.53	5.02
Fair	7.73	11.52	9.73	8.93	8.21	6.54	4.89
Poor	11.04	22.07	17.70	16.81	14.45	8.82	7.50

Table 26

Percent relative standard errors for Table 6, percent distribution of payments for prescription drug use, by noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Source of payment					Unknown source or unpaid amount
	Medicare	Medicaid	Private insurance	Out-of-pocket	Other	
Total.....	20.61	12.04	10.40	2.78	22.24	28.05
Age						
65-69 years	38.44	24.86	13.59	4.52	28.86	47.88
70-74 years	27.04	18.23	19.14	4.60	34.26	48.69
75-79 years	39.99	19.71	19.92	4.89	44.00	(1)
80 years or over.....	31.28	20.12	24.34	4.59	34.21	(1)
Sex						
Male.....	29.20	22.51	15.07	4.45	30.85	48.58
Female.....	24.16	12.61	11.75	2.94	27.53	33.37
Race						
White.....	21.88	13.02	10.58	2.76	21.62	31.22
Black	43.89	23.93	(1)	14.87	(1)	(1)
Annual family income						
Less than \$5,000.....	26.99	12.26	32.98	5.80	(1)	46.33
\$5,000-\$9,999	33.75	25.31	17.16	4.38	33.70	43.61
\$10,000-\$19,999	34.56	30.76	15.01	4.38	30.35	(1)
\$20,000 or more	41.29	40.91	19.21	6.71	41.73	(1)
Education						
Less than 8 years	30.80	16.61	31.05	5.63	31.46	(1)
8 years	35.62	23.39	22.49	4.76	43.69	38.19
9-11 years	35.57	20.22	21.27	5.82	32.83	(1)
12 years	45.15	46.13	17.10	6.41	34.51	(1)
13 years or more	40.83	(1)	13.20	5.34	(1)	45.10
Region						
Northeast	47.12	29.98	25.57	5.47	35.42	(1)
North Central	36.63	24.57	20.72	6.20	35.86	49.75
South.....	32.78	19.87	16.60	3.59	44.22	39.05
West	25.12	23.48	18.87	7.83	40.83	(1)
Type of community						
SMSA central city	39.71	20.27	20.18	5.47	31.28	(1)
SMSA remainder	41.99	22.15	15.67	4.75	33.73	33.10
Non-SMSA urban	35.35	37.39	21.57	5.80	37.62	(1)
Non-SMSA rural	39.72	15.17	25.12	4.91	(1)	(1)
Perceived health status						
Excellent	34.55	40.00	20.72	4.07	32.47	(1)
Good	28.08	21.45	13.07	3.56	27.19	42.96
Fair	39.60	14.78	15.00	4.35	39.44	40.57
Poor	36.86	17.78	22.77	6.64	41.66	(1)

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

Table 27

**Percent relative standard errors for Table 7,
percent distribution of prescriptions filled, by
specification for noninstitutionalized, aged
Medicare beneficiaries: United Staes, 1980**

Characteristic	Generic	Brand name
Total	5.22	1.09
Age		
65-69 years	8.58	1.81
70-74 years	8.07	1.56
75-79 years	9.24	2.19
80 years or over	12.13	2.35
Sex		
Male	8.42	1.86
Female	5.45	1.10
Race		
White	5.40	1.12
Black	22.11	5.01
Annual family income		
Less than \$5,000	10.42	1.98
\$5,000-\$9,999	8.40	1.69
\$10,000-\$19,999	9.56	2.08
\$20,000 or more	11.02	2.62
Education		
Less than 8 years	11.27	2.38
8 years	9.53	1.45
9-11 years	12.58	2.99
12 years	7.97	1.97
13 years or more	13.06	2.80
Region		
Northeast	9.42	2.18
North Central	6.23	1.14
South	11.54	1.71
West	7.21	2.57
Type of community		
SMSA central city	9.05	1.96
SMSA remainder	8.34	1.72
Non-SMSA urban	15.92	2.82
Non-SMSA rural	10.61	2.48
Perceived health status		
Excellent	10.24	2.15
Good	7.19	1.47
Fair	7.32	1.38
Poor	11.36	2.75

Table 28

Percent relative standard errors for Table 8, percent distribution of prescriptions, by therapeutic function for noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Therapeutic function				
	Cardiovascular/ renal agents	Relief of pain	Affecting nervous system	Hormones and hormonal agents	Respiratory and allergy
Total	2.84	4.87	6.46	8.91	9.43
Age					
65-69 years	4.86	9.73	9.62	11.98	14.75
70-74 years	4.42	7.73	11.33	13.55	15.52
75-79 years	6.90	10.05	12.56	15.11	16.40
80 years or over	5.24	12.37	14.16	18.99	21.86
Sex					
Male	3.95	7.50	10.25	15.15	14.66
Female	3.14	6.15	8.48	9.14	9.72
Race					
White	2.99	5.14	6.20	9.42	9.79
Black	10.08	15.03	34.71	26.09	22.91
Annual family income					
Less than \$5,000	4.43	7.02	11.07	18.41	10.69
\$5,000-\$9,999	5.39	8.24	12.13	11.39	14.59
\$10,000-\$19,999	5.16	10.44	12.41	16.35	16.12
\$20,000 or more	7.06	11.62	19.84	17.37	18.77
Education					
Less than 8 years	5.84	8.98	13.04	18.24	20.00
8 years	5.35	10.25	12.56	16.35	15.96
9-11 years	5.81	12.13	13.83	15.69	18.00
12 years	6.49	11.60	16.27	12.37	20.78
13 years or more	5.56	11.58	15.61	14.79	20.22
Region					
Northeast	4.96	13.79	17.90	18.23	19.72
North Central	6.06	9.35	13.44	18.35	11.88
South	3.98	6.32	9.76	12.75	15.84
West	7.54	13.07	10.91	24.01	26.52
Type of community					
SMSA central city	4.65	9.73	13.94	12.97	21.55
SMSA remainder	4.91	8.04	11.35	13.59	12.16
Non-SMSA urban	6.66	8.08	16.59	16.82	18.02
Non-SMSA rural	4.44	11.84	10.24	23.12	17.44
Perceived health status					
Excellent	7.02	11.56	13.34	17.60	16.18
Good	5.09	8.82	11.09	11.45	14.16
Fair	4.41	9.07	12.73	12.71	15.37
Poor	4.70	11.04	11.73	19.70	18.99

Table 28—Continued

Percent relative standard errors for Table 8, percent distribution of prescriptions, by therapeutic function for noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	Therapeutic condition				
	Gastrointestinal	Homeostatic/ nutrient agents	Antimicrobial	Ophthalmology	All others
Total	7.54	8.33	5.94	11.64	6.69
Age					
65-69 years	12.06	14.74	7.68	29.76	9.21
70-74 years	13.15	15.50	10.66	20.07	10.32
75-79 years	14.88	12.94	13.40	31.69	14.82
80 years or over	17.15	13.16	19.40	22.86	14.62
Sex					
Male	12.57	10.97	8.33	18.06	9.51
Female	9.43	10.37	7.83	14.95	8.30
Race					
White	7.75	8.73	5.80	13.11	6.96
Black	21.60	29.92	24.75	36.23	18.81
Annual family income					
Less than \$5,000	11.84	12.41	14.40	24.83	12.10
\$5,000-\$9,999	13.79	11.84	9.95	20.92	9.24
\$10,000-\$19,999	12.72	18.89	9.06	23.29	15.41
\$20,000 or more	15.85	17.35	13.13	26.04	11.07
Education					
Less than 8 years	11.85	13.27	12.02	22.31	9.62
8 years	13.35	14.89	14.99	25.13	11.63
9-11 years	15.59	23.37	13.16	23.73	12.40
12 years	18.48	21.52	12.50	22.15	12.77
13 years or more	15.13	13.94	12.95	22.25	19.17
Region					
Northeast	15.36	23.60	18.74	22.51	14.46
North Central	15.06	14.53	12.39	26.35	12.20
South	10.74	11.88	7.78	18.35	9.44
West	18.00	13.88	9.00	21.04	17.15
Type of community					
SMSA central city	14.32	16.48	10.96	16.52	10.44
SMSA remainder	10.95	11.84	9.56	21.43	11.52
Non-SMSA urban	16.38	22.44	11.09	27.87	15.39
Non-SMSA rural	18.35	14.63	14.95	43.40	8.43
Perceived health status					
Excellent	16.76	18.67	12.68	23.47	13.54
Good	13.05	12.02	10.90	17.01	14.33
Fair	11.58	13.02	10.66	19.75	9.23
Poor	14.38	17.26	13.18	32.18	10.36

Table 29

Percent relative standard errors for Table 9, prescription drug use and expenditures among noninstitutionalized, aged Medicare beneficiaries, by poverty level: United States, 1980

Poverty level	Beneficiaries		Prescriptions		Prescription charges		Average number of prescriptions per beneficiary	Average annual charge per beneficiary
	Number in millions	Percent	Number in millions	Percent	Amount in millions	Percent		
Total	4.86	0.00	6.02	0.00	6.00	0.00	3.75	3.59
Poor	7.51	6.89	10.99	9.30	10.79	9.17	7.51	7.56
Near-poor	7.13	4.01	7.54	4.48	7.97	4.92	4.80	5.19
Nonpoor	5.63	3.38	7.82	4.93	7.80	5.14	5.83	5.66

Table 30

**Percent relative standard errors for Table 10,
average number of prescriptions filled per
noninstitutionalized, aged Medicare beneficiary,
by poverty level: United States, 1980**

Characteristic	Poor	Near-poor	Nonpoor
Total	7.51	4.80	5.83
Age			
65-69 years	15.41	7.42	8.70
70-74 years	9.54	7.52	9.16
75-79 years	12.02	11.88	10.77
80 years or over	18.66	9.26	13.12
Sex			
Male	13.57	6.85	8.01
Female	8.18	5.39	7.09
Race			
White	8.16	5.18	5.76
Black	16.33	21.07	26.83
Annual family income			
Less than \$5,000	7.71	10.92	(¹)
\$5,000-\$9,999	23.63	5.64	21.63
\$10,000-\$19,999	32.04	14.26	7.08
\$20,000 or more	(¹)	(¹)	8.73
Education			
Less than 8 years	9.46	10.23	13.29
8 years	17.60	7.72	11.34
9-11 years	12.55	10.37	12.32
12 years	26.77	7.70	9.47
13 years or more	23.27	11.10	11.43
Region			
Northeast	23.27	12.18	13.17
North Central	14.39	8.17	8.60
South	9.60	8.00	8.65
West	14.94	7.09	19.58
Type of community			
SMSA central city	10.62	8.12	8.82
SMSA remainder	17.41	6.49	8.53
Non-SMSA urban	13.68	12.10	9.14
Non-SMSA rural	14.10	11.94	18.70
Perceived health status			
Excellent	15.58	8.84	10.47
Good	10.16	9.12	7.85
Fair	10.40	6.27	8.89
Poor	13.92	10.14	11.92

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

Table 31

**Percent relative standard errors for Table 11,
average prescription drug charges per
noninstitutionalized, aged Medicare beneficiary,
by poverty level: United States, 1980**

Characteristic	Poor	Near-poor	Nonpoor
Total	7.56	5.19	5.66
Age			
65-69 years	19.02	9.07	8.77
70-74 years	9.93	8.24	8.92
75-79 years	11.75	11.84	10.78
80 years or over	16.18	9.95	13.76
Sex			
Male	15.53	8.77	8.24
Female	7.65	5.48	6.72
Race			
White	8.12	5.43	5.49
Black	18.85	25.72	31.74
Annual family income			
Less than \$5,000	7.55	13.70	(¹)
\$5,000-\$9,999	27.37	6.52	22.55
\$10,000-\$19,999	23.65	14.60	7.00
\$20,000 or more	(¹)	40.06	8.48
Education			
Less than 8 years	10.59	10.18	14.60
8 years	14.03	8.78	11.46
9-11 years	11.16	12.00	11.84
12 years	25.00	8.83	9.59
13 years or more	27.01	13.11	10.45
Region			
Northeast	20.24	12.35	12.75
North Central	17.55	9.84	8.42
South	10.36	9.63	8.30
West	14.53	7.01	19.42
Type of community			
SMSA central city	10.70	8.80	8.55
SMSA remainder	16.27	5.75	8.40
Non-SMSA urban	15.44	14.57	8.89
Non-SMSA rural	16.80	12.41	15.91
Perceived health status			
Excellent	14.14	10.72	11.67
Good	10.93	8.94	7.59
Fair	10.29	6.16	9.29
Poor	13.33	11.89	10.48

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

Table 32

Percent relative standard errors for Table 12, percent distribution of payments for prescription drug use by noninstitutionalized, aged Medicare beneficiaries, by poverty level and source of payment: United States, 1980

Poverty level	Source of payment					Unknown source of unpaid amount
	Medicare	Medicaid	Private plans	Out-of-pocket	Other	
Total.....	20.61	12.04	10.40	2.78	22.24	28.05
Poor	27.31	11.99	38.41	6.41	(1)	43.97
Near-poor	30.44	22.86	15.45	3.36	28.85	42.03
Nonpoor	32.68	34.88	11.86	4.36	31.09	43.79

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

Table 33

Percent relative standard errors for Table 14, percent distribution of prescriptions filled, by specification for noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Generic drug indicator	Poor	Near-poor	Nonpoor
Generic	13.39	8.05	7.39
Brand name	2.50	1.60	1.71

Table 34

Percent relative standard errors for Table 15, prescription drug use and expenditures among the high-use and high-expenditure subgroups of the noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Item	Prescriptions		Prescription charges		Average number of prescriptions per beneficiary	Average annual charge per beneficiary
	Number in millions	Percent	Amount in millions	Percent		
Total aged.....						
Medicare beneficiaries.	6.02	0.00	6.00	0.00	3.75	3.59
High-use subgroup	13.99	10.18	14.08	10.64	3.17	4.02
High-expenditure subgroup	13.42	9.53	12.09	8.03	4.60	3.69

Table 35

Percent relative standard errors for Table 16, average number of prescriptions and average prescription drug charges per beneficiary for high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Characteristic	High-use subgroup		High-expenditure subgroup	
	Average number of prescriptions	Average charges	Average number of prescriptions	Average charges
Total	3.17	4.02	4.60	3.69
Age				
65-69 years	5.19	5.82	7.96	5.76
70-74 years	3.71	5.51	4.22	4.16
75-79 years	5.47	8.84	8.49	9.03
80 years or over	12.44	11.51	17.36	6.97
Sex				
Male	4.70	9.72	5.87	6.96
Female	4.03	4.48	6.26	3.89
Race				
White	3.31	4.22	4.77	3.89
Black	2.64	8.75	7.50	6.16
Annual family income				
Less than \$5,000	9.66	7.54	11.49	5.78
\$5,000-\$9,999	4.98	10.01	6.76	7.56
\$10,000-\$19,999	3.61	4.31	5.28	4.74
\$20,000 or more	6.67	10.28	11.67	7.08
Education				
Less than 8 years	4.33	4.78	7.03	3.62
8 years	8.77	7.98	9.39	4.88
9-11 years	7.04	10.98	9.53	10.82
12 years	9.77	12.92	15.44	7.93
13 years or more	6.69	12.21	11.06	11.27
Region				
Northeast	8.14	8.50	12.06	8.86
North Central	7.92	9.33	10.23	7.97
South	2.77	5.55	5.61	5.42
West	5.62	8.33	6.11	3.41
Type of community				
SMSA central city	5.07	6.90	7.37	4.63
SMSA remainder	6.35	6.57	7.48	5.34
Non-SMSA urban	4.76	9.12	11.62	10.47
Non-SMSA rural	4.54	8.38	8.64	7.82
Perceived health status				
Excellent	4.99	19.98	10.69	14.65
Good	5.53	8.06	8.53	4.03
Fair	2.98	5.56	5.36	4.15
Poor	6.95	7.32	8.72	7.86

Table 36

Percent relative standard errors for Table 17, percent distribution of payments for prescription drug charges among high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Item	Source of payment					Unknown source or unpaid amount
	Medicare	Medicaid	Private plans	Out-of-pocket	Other	
Total persons.....	20.61	12.04	10.40	2.78	22.24	28.05
High-use subgroup	42.19	32.62	19.04	7.96	41.25	(1)
High-expenditure subgroup	37.41	29.43	17.41	8.23	48.41	(1)

¹Relative standard error is greater than 50 percent, or sample size is less than 20.

Table 37

Percent relative standard errors for Table 18, percent distribution of prescriptions filled, by specification for high-utilization, high-expenditure, noninstitutionalized, aged Medicare beneficiaries: United States, 1980

Generic drug indicator	High-use subgroup	High-expenditure subgroup
Generic	13.66	13.23
Brand name	2.81	1.85

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